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ABSTRACT

The curriculum on academic programing is intended to be a resource, subject to updating as necessary, for education of blind and partially sighted middle school students at the Georgia Academy for the Blind. Information about core skills in teaching is presented in the first four chapters with the following titles: "Introduction to Academic Programming," "Task Aanlysis and the Development of Taxonomies of Goals and Objectives," "Assessment in Academic Programs," and "Selection and Use of Instructional Strategies and Materials." Next, the six basic curriculum domains are covered with chapters on arithmetic, language arts, reading, health, science, and social studies. Each of the six curriculum chapters includes a record sheet and sections on: (1) broad skills, enabling skills, and specific skills; (2) taxonomy of goals and objectives; and (3) instructional strategies (such as use of dictionary lesson plans for language arts, or a water pollution lesson plan for science). Worksheets, sample tests, and questions for units are also included for each curriculum domain. (MC)

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Middle School Curriculum Guide
Georgia Academy for the Blind

EC151993

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MIDDLE SCHOOL CURRICULUM FOR VISUALLY IMPAIRED STUDENTS

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Preface

This volume on academic programming for visually impaired students is intended to serve as a useful resource to educators, whether or not they have experience working with the blind and partially sighted. First, it presents information about the core skills in teaching: (a) task analysis and the development of taxonomies of goals and objectives; (b) assessment; (c) selection and use of instructional strategies and materials. Second, it presents information about six basic curriculum domains: (a) arithmetic; (b) language arts; (c) reading; (d) health; (e) science; (f) social studies. For the experienced and inexperienced teacher alike, these chapters should serve as a reference which defines the specific, enabling, and broad skills youngsters are expected to master at the Georgia Academy for the Blind. Of course, it is the teacher's primary responsibility to ensure that youngsters have, indeed, mastered the skills during their tenure at the Academy.

The volume is not intended as a permanent curriculum guide. Rather, it should be revised and updated as new, effective approaches are added to the literature. In addition, skills in the various taxonomies should be modified should it be determined that they would best be located in a different sequence or changed in other ways. In short, the following pages are a beginning, not an end point.

Acknowledgements

Seven individuals at the Georgia Academy for the Blind were instrumental in making this text possible. First, Dr. Richard E. Hyer, Jr., Director of the Academy, recognized the need for such a volume. Through his efforts, funds were obtained which supported the technical assistance necessary for the development of the text.

Second, thanks go to Mrs. Barbara Stevenson, Coordinator of Academic Programs at the Academy. Mrs. Stevenson served as liaison between the authors and the Academy teachers. In addition, she was editor for many of the instructional strategies prepared for the text. Her efforts greatly improved the final version of the text, although her name does not appear on any domain presented.

Finally, thanks go to the five teachers who helped develop taxonomies of goals and objectives and representative instructional strategies for each domain. They are Geraldine Pye, Mary Drakes, Mabel Roberts, Orrie Duhart, and Sandra Barwick. Often, these individuals performed beyond the "call of duty." Their efforts should be rewarded.

RCE & PJM

CHAPTER ONE

INTRODUCTION TO ACADEMIC PROGRAMMING

Introduction to Academic Programming

The principles on which this academic curriculum for the visually impaired is based are found in the Diagnostic Teaching Model as espoused by Eaves and McLaughlin (1977) and Cartwright and Cartwright (1972). The model was developed as a reaction to a serious charge that has been leveled against the field of special education for the past two decades: That special educators have failed to fulfill their promise to prepare exceptional children for successful functioning in adulthood (see for example, Dunn, 1968).

When such a serious charge is made, one must first review the evidence on which the charge is based. In fact, there exists about as much evidence to support the efficacy of special education as there is evidence which indicates its failure. Apparently, an important variable which leads to the ultimate success or failure of a specific program is the level of training of the teachers. In this context, level of training means the extent to which the teacher provides students with a structured program based on what is known about how children learn and how children are motivated.

Unfortunately in many respects, most special educators have reacted to the charge by seeking new ways to promulgate successful functioning in the children they teach. In doing so, they are attracted by new, "glittering," never-before-tried ideas. As might be imagined, such novel ideas have no foundation to support their use. Indeed, there is no way of knowing whether or not such practices violate Hippocrates' admonition to, "Do no harm."

The Diagnostic Teaching Model proposes a different tact in response to the charge that special education has failed in its obligations to exceptional children. That response is to make sure that what we are doing is consistent with what we know about the learning and motivation of exceptional children.

Judging from recent attempts to discover aptitude by treatment interactions among various exceptional children (see Blake, 1976; Ysseldyke, 1973), we can be fairly confident that, for the most part, the conditions that influence normal children's learning and motivation also apply to exceptional children. And, although special education training programs have not paid close attention to the fact, the conditions that affect learning and motivation are many and have been documented for quite some years. In short, it is the position of the authors and the staff of the Georgia Academy for the Blind that in this curriculum, only basic, well-documented practices will be included. Novel, unsupported methods must await validation before they are used in the education of the visually impaired. To implement the reverse approach is, in fact, experimenting with large numbers of children without their consent or knowledge.

Purpose and Rationale

This chapter is intended to present a system for teaching that is well-grounded in the literature of special education, educational psychology, child development, sociology, psychology, and other related disciplines. It has been used successfully in teacher training programs (e.g., Penn State University, Auburn University) as well as by programs providing direct services to exceptional children (e.g., Clinton County Head Start Programs, Lock Haven, Pennsylvania; Demonstration Classes, State College, Pennsylvania).

The Diagnostic Teaching Model is presented in flowchart form in Figure 1 (after Cartwright & Cartwright, 1970). It was chosen because it embodies the frequently advocated features of individualism and behaviorism in teaching children (Martin, 1972). It was developed to be applicable to all types and levels of teaching: preservice, inservice, elementary, intermediate, secondary, handicapped children, and normal children. The Diagnostic

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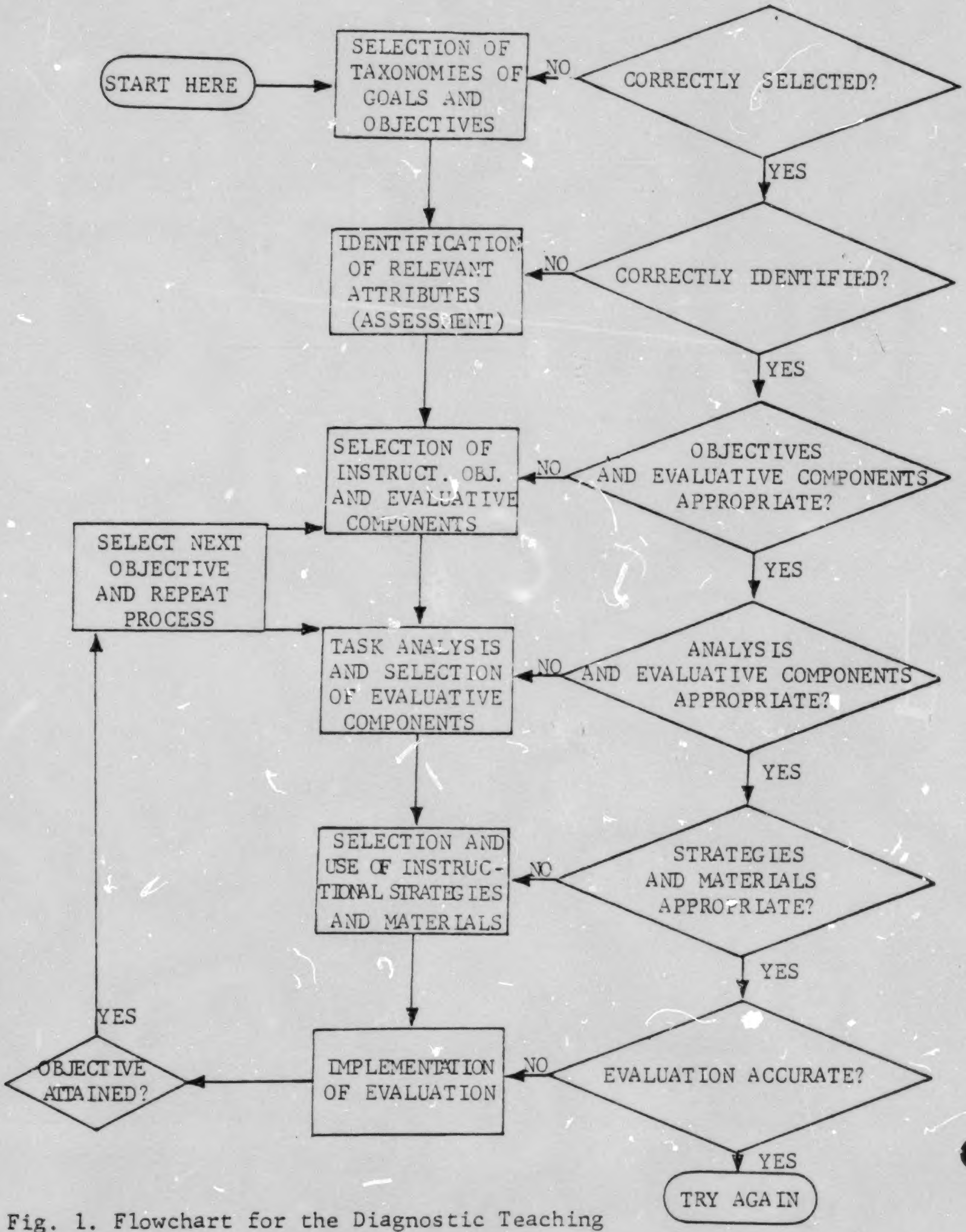
START HERE
SELECTION OF TAXONOMIES OF GOALS AND OBJECTIVES
NO
CORRECTLY SELECTED?
YES
IDENTIFICATION OF RELEVANT ATTRIBUTES (ASSESSMENT)
NO
CORRECTLY IDENTIFIED?
YES
SELECTION OF INSTRUCT. OBJ. AND EVALUATIVE COMPONENTS
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OBJECTIVES AND EVALUATIVE COMPONENTS APPROPRIATE?
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STRATEGIES AND MATERIALS APPROPRIATE?
YES
YES
OBJECTIVE ATTAINED?
IMPLEMENTATION OF EVALUATION
NO
EVALUATION ACCURATE?
YES
TRY AGAIN

Fig. 1. Flowchart for the Diagnostic Teaching Model

Teaching Model (DTM) also provides a framework which accommodates the application of what we know to be the most advantageous approaches in education.

The remainder of this chapter describes the form and function of each component of the DTM (see Figure 1).

Domains and Taxonomies

During the initial prototype evaluation of the DTM (1973-74), it was assumed that teachers had a sound working knowledge of the domains that they were likely to be called upon to assess and teach. However, as a group they tended not to be able to formulate coherent taxonomies of objectives in such commonplace domains as mathematics, reading, spelling, etc. As a result, the teacher often ended up with a conglomeration of assessment data which was not comparable from instrument to instrument and without any recognizable sequence. Frequently, specified instructional objectives did not reflect the available assessment data. Consequently, the authors added a new initial step in the model: The selection of taxonomies of goals and objectives for each domain relevant to the individual child's learning and performance. Therefore, for children screened as demonstrating weaknesses in mathematics, the teacher was required to specify a comprehensive taxonomy of objectives for mathematics and then to assess the child according to the objectives in the taxonomy. A short portion of one such taxonomy (Eaves, 1974) is illustrated below.

ADDITION:

3.1.0. Basic Addition Facts

3.1.1. Given all possible permutations of the addition facts (0-5) presented vertically and in random order, the child will write the answers correctly at a rate of at least 24 per minute.

3.1.2. Given all possible permutations of the addition facts (6-9) presented vertically and in random order, the child will write the answers correctly at a rate of at least 20 per minute.

3.1.3. Given all possible permutations of the addition facts (0-9) presented vertically and in random order, the child will write the answers correctly at a rate of at least 20 per minute.

Given taxonomies such as this in the relevant domains, teachers are better able to assess, identify strengths and weaknesses in objective form, develop and use instructional strategies and materials, and evaluate outcomes. Without them, special educators often end up teaching highly objective skills, but skills which are too frequently trivial or unnecessary for the child in question. The taxonomies provide the teacher with a guide that directs his assessment; this is a primary advantage of requiring the step in the system. With taxonomies, teachers easily move from the domain level (e.g., "Which domains can be considered as strengths and which can be considered as weaknesses for this child?") to the broad skill level ("If math is a serious weakness, does the weakness lie in the broad skill of sets, using numbers and numerals, addition, subtraction, . . . , etc?") to the enabling skill level ("If addition is the first broad skill in which the child is weak, does the weakness lie in addition facts, the formal operations of addition, or addition problem solving?")

Identification of Relevant Attributes (Assessment)

The identification of the relevant attributes of the child and his environment, better known as assessment, is comprised of three important concepts:

1. Taxonomic Level
2. Assessment Phase
3. Assessment Methods Used

Figure 2 illustrates the relationships among the three concepts. In the Screening phase of assessment, the teacher uses these assessment methods to determine which of the relevant attributes of the child and his environment warrant special assistance: informal consultation, structured interviews, inspection of previously collected data, and screening devices (questionnaires, rating scales, etc.) The term, attributes, refers to the large domains that teachers often find themselves concerned with in educating children. Examples include skills in reading, mathematics, and writing, classroom conduct, family cohesion, and so on. In Screening, the purpose is not particularly to "nail down" highly specific enabling skills that need improvement. At this stage of assessment, the methods and instruments are not usually valid or reliable enough to make fine decisions at the enabling skill level. Rather, the teacher simply wants to learn which of the entire range of attributes will require the most concerted effort on her part.

During the second phase of assessment, Clinic Assessment, the teacher uses broad-band norm-referenced tests, criterion-referenced tests, observation, and referral to confirm or deny the importance of the needs specified during Screening. Tentative hypotheses are also proposed regarding the broad skills which underlie each attribute area or domain. A second purpose in Clinic Assessment is the telescopic narrowing down of instructional entry points. Each phase of assessment brings us closer to specifying those short term objectives that the teacher will attempt to impart to the child.

During the third phase of assessment, Follow-up Assessment, the teacher employs narrow-band criterion-referenced tests and observation systems to

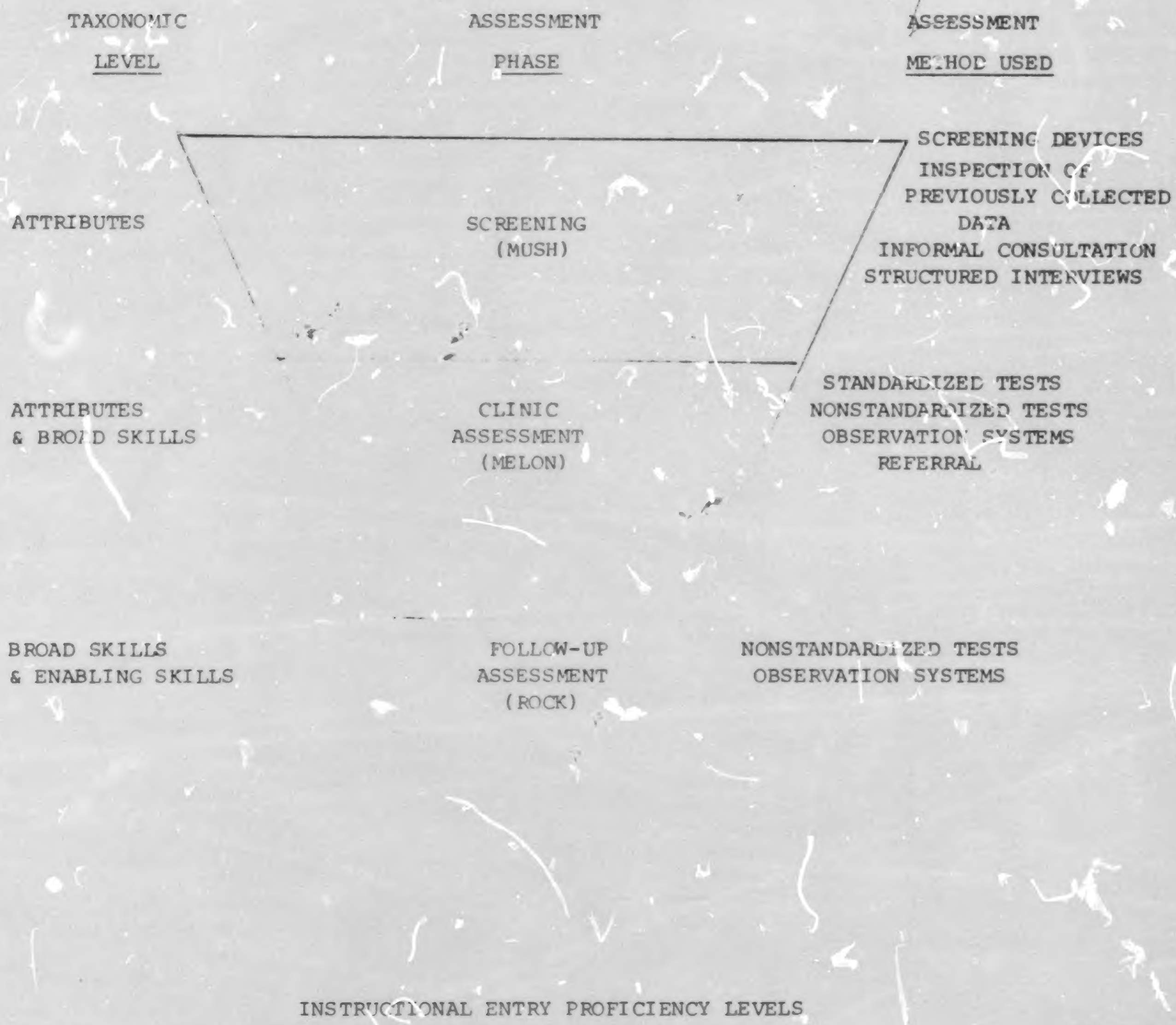
TAXONOMIC LEVEL
ASSESSMENT PHASE
ASSESSMENT METHOD USED
ATTRIBUTES
SCREENING (MUSH)
SCREENING DEVICES
INSPECTION OF PREVIOUSLY COLLECTED DATA
INFORMAL CONSULTATION
STRUCTURED INTERVIEWS
ATTRIBUTES & BROAD SKILLS
CLINIC ASSESSMENT (MELON)
STANDARDIZED TESTS
NONSTANDARDIZED TESTS
OBSERVATION SYSTEMS
REFERRAL
BROAD SKILLS & ENABLING SKILLS
FOLLOW-UP ASSESSMENT (ROCK)
NONSTANDARDIZED TESTS
OBSERVATION SYSTEMS
INSTRUCTIONAL ENTRY PROFICIENCY LEVELS

Fig. 2 Relationships among assessment variables.

identify the specific strengths and weaknesses of the child and his environment at the enabling skill level. An observation schedule used to measure instances of compliance to teacher requests would be an example of an instrument used in Follow-up Assessment. A criterion-referenced test constructed to measure the child's knowledge and use of contractions is another example.

The real point in going through all of these phases during assessment is that educators can never hope to assess individually every major and minor objective that we have for children. The time, expense, and effort involved in using narrow band instruments makes it impossible except in theory. The latter discussion gives a flavor of the flow of events in the first task area. Below are the broad instructional objectives teachers are expected to perform during the Identification of Relevant Attributes (Assessment). Instructional objectives in this section and those to follow are undergirded by a series of short term objectives which are components of the instructional objective.

SELECT ASSESSMENT METHODS & INSTRUMENTS	1. Given several questions about an actual child and his environment, select the assessment methods and instruments that can best answer the questions.
CONSTRUCT ASSESSMENT METHODS & INSTRUMENTS	2. Given several questions about an actual child and his environment, construct assessment instruments that can best answer the questions (assuming that appropriate instruments are unavailable).
COLLEGE ASSESSMENT DATA	3. Given the methods and instruments for assessment, collect the assessment data according to the instructions suggested by the producers of the instruments and incorporate appropriate means to record the raw data.
SUMMARIZE ASSESSMENT DATA	4. Given raw assessment data, summarize the data in a relevant and meaningful way in order to help answer assessment questions.

INTERPRET SUMMARIES OF ASSESSMENT DATA

5. Given accurate, relevant, and meaningful summaries of assessment data, interpret the summaries and discuss their implications with regard to the assessment questions.

ASSESS NEEDS & STATE ENTRY PROFICIENCY LEVELS

6. Given summaries and interpretations of assessment data derived from a variety of assessment methods and resources and covering a variety of attributes, determine the attributes most in need of improvement and state estimates of the child's entry proficiency levels for each broad skill and the enabling skills which undergird each broad skill.

Selection of Broad Objectives and Evaluative Components

The need for the teacher to have a taxonomy of goals and objectives from the start will become clear at this stage in the DTM. It is here that the teacher translates the broad skills named as needs during assessment into relatively long-term (or broad) objectives for the child. For instance, if addition, a broad skill of mathematics, was found to be a weakness during assessment, in this phase it is the teacher's job to specify in clear, unambiguous form a broad objective which will allow the gathering of data which indicates whether or not the instructional objective has been attained.

Second, he must specify the instrument he will use to evaluate whether or not the child has attained the broad objective. Inasmuch as the broad skill was previously measured during assessment, it makes sense that the same instrument or an equivalent instrument be used to evaluate instructional outcomes. Therefore, it is important for the teacher to know what objectives comprise the attribute area before beginning to apply this model.

There are three broad instructional objectives that teachers are expected to perform to criterion levels in the Selection of Broad Objectives and Evaluative Components. They are:

SPECIFY TERMINAL BEHAVIOR & CONDITIONS

1. Given a hierarchy of attributes in need of improvement and their related broad skills, specify observable terminal behavior and the conditions under which the behavior will occur for each broad skill.

SPECIFY CRITERIA FOR MINIMALLY ACCEPTABLE PERFORMANCE	2. Given several kinds of terminal behavior and varying conditions under which the behavior will occur, specify the criteria for minimally acceptable performance.
SPECIFY EVALUATIVE COMPONENTS	3. Given several broad objectives for a child, specify evaluative components and classify them according to: a. type of evaluation (formative-summative) b. type of mastery (absolute-relative) c. type of data (percentage, rate, duration, etc.) d. method of evaluation (criterion-referenced observation, etc.)

Task Analysis and Selection of Evaluative Components

Once again, the need for a "built-in" taxonomy of goals and objectives at the outset is apparent. It is during this stage of the DTM that the teacher task analyzes or "breaks down" the terminal behavior of each broad objective specified in the previous task area and identifies the enabling skills that are requisites for the performance of the instructional objective. For example, if hand-eye coordination can be considered one of the broad skills of the gross motor domain, then it is possible to task analyze hand-eye coordination into such enabling skills as "catching" and "throwing" (Reid, 1976). Likewise, if phonetic analysis can be considered a broad skill in reading, then examples of enabling skills underlying the broad skill might include letter recognition, initial consonants, medial consonants, consonant blends, vowels, and so on.

After the enabling skills are identified, the teacher must specify in clear unambiguous form, enabling objectives which will allow satisfactory evidence to be gathered that will indicate whether or not the child has mastered the enabling skill. As they are used here, enabling objectives, or any objectives for that matter, are precisely stated definitions of the more ambiguous terms used to identify enabling skills. It is as if the teacher is saying, "Now, when I talk about mastery of initial consonants, here's what I mean: When orally presented with a representative sample of 60 words beginning with each of the consonants in the alphabet, the child will supply the correct initial consonant sound with 100% accuracy on three consecutive days."

Once the teacher has written the enabling objective for an enabling skill, she can specify characteristics of the instrument she will use to evaluate mastery of the objective by the child. Since the child's proficiency level was previously estimated during assessment, the same or an equivalent instrument should be used to evaluate instructional outcomes. And again, it is crucial that the teacher know which enabling skills and enabling objectives comprise the broad skill before beginning assessment procedures.

There are three broad instructional objectives that teachers are expected to perform in Task Analysis and Selection of Evaluative Components. They are:

LIST ENABLING SKILLS AND SPECIFY ENABLING OBJECTIVES

1. Given several instructional objectives for broad skills, analyze the terminal behavior, list the enabling skills comprising the terminal behavior, and specify an enabling objective for each enabling skill in need of improvement.

SPECIFY CRITERIA FOR MINIMALLY ACCEPTABLE PERFORMANCE

2. Given several enabling skills in need of improvement and their concomitant enabling objectives, specify criteria for minimally acceptable performance.

3. Given several enabling objectives for a child, specify evaluative components and classify them according to:

   a. type of evaluation (formative-summative)
   b. type of mastery (absolute-relative)
   c. type of data (percentage, rate, duration, etc.)
   d. method of evaluation (criterion-referenced test, observation, etc.)

Selection and Use of Instructional Strategies and Materials

Contrary to the opinions of some, the authors believe there are a large number of teaching principles that teachers could and should use when they develop instructional strategies. Individuals such as Blake (1976), Bugelski (1971), DeCecco (1968), and Skinner (1968) have contributed much to the specification of these principles by applying research on the psychology of learning and motivation to teaching practice. Unlike many of the current "theories" presented in special education texts, these principles or conditions of learning are not at all mystical, nor are they new. For example, the literature on distribution of practice and overlearning extends back to the 1930's. The characteristic effects of different schedules of reinforcement were experimentally studied as far back as the 1920's. Itard employed operant principles 175 years ago. Not only are they not mystical, many of these conditions of learning are rather well-known to teachers. For instance, most educators are aware that learners need immediate feedback or knowledge of results in order to make adjustments in their future performance. Nevertheless, the authors find teachers who wait for days to let the child know that he behaved incorrectly . . . or badly . . . or even very well. Frequently, teachers fail to let the child know how he behaved incorrectly and how he might change in order to behave correctly. We find teachers who refuse to use drill techniques even when the objective specifies speed and rote memory as the terminal goal (e.g., multiplication facts). Contrarily, other teachers use drill regardless of the type of learning involved.

So far, the authors have identified about 20-30 general conditions of acquisition, retention, and transfer (i.e. conditions that apply regardless of the specific type of learning involved) and about 24-30 conditions that apply to specific types of learning (i.e., verbal learning, concept learning, problem solving, discrimination learning, motor learning, and dealing with connected discourse). The many conditions affecting motivation which have been advanced so effectively by advocates of behavior modification constitute

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another well-documented set of basic principles. We believe that if we impart these 80 or so teaching principles to teachers and they consistently apply them, these skills will carry them far beyond most of the pseudo-empirical teaching approaches that are foisted on teachers in the field every day. In short, we tend to be skeptical of commercial publishers who promote "The Latest Thing in Educational Technology," cleverly packaged materials composed of lightweight, colorful boxes with a handle, or quick and dirty assessment instruments designed to save the teacher time and the administration money. We are conservative in the sense that we prefer to employ educational approaches that have repeatedly shown themselves to promote in children more effective approaches in living.

There are three broad instructional objectives that teachers are expected to perform in the Selection and Use of Instructional Strategies and Materials. They are:

DEVELOP AN APPROPRIATE INSTRUCTIONAL STRATEGY	1. Given a task analysis of a broad skill and the enabling objectives for each enabling skill which underlies the broad skill, develop an appropriate instructional strategy to match the components of the enabling objective(s) and the characteristics of the child.
ADOPT, ADAPT, OR DESIGN INSTRUCTIONAL MATERIALS	2. Given an instructional strategy that matches the components of the short term objective(s) and the characteristics of the child, adopt, adapt, or design materials that are commensurate with the strategy that has been developed.
IMPLEMENT THE STRATEGY	3. Given an appropriate instructional strategy and materials that are commensurate with the strategy, implement the instructional strategy as it was developed.

Implementation of Evaluation

Since the specific instruments to be used in evaluating instructional outcomes were selected during the objective specification phase, the teacher has only to collect, summarize, and interpret evaluation data in this final phase of the DTM. In this way the teacher can determine the goodness of the strategies and materials used.

Although rather specific, narrow-band instruments which allow data to be collected formatively, are recommended for evaluation purposes. All of the methods mentioned in the Identification of Relevant Attributes (Assessment) are conceivably appropriate here. Since the instruments and performance objectives for teachers are approximately the same as those employed during assessment, teachers who have successfully completed the former phase usually have little trouble implementing evaluation. Likewise, if objectives have been clearly developed, the teacher should have little difficulty determining the efficacy of the instructional strategy.

When the objective has been attained by the child, the teacher simply reroutes to the list of enabling objectives yet to be achieved and selects and implements a strategy designed to facilitate the child's mastery of the next set of sequential objectives. As evaluation data indicate mastery of the new objectives, the cycle is again repeated.

Behavior Management and Other Task Areas

Although a rather elaborate system is employed to evaluate how well teachers interact with children, space limitations prevent its discussion here. However, Herr, Eaves, McLaughlin, and Horn (1977) have described the system rather thoroughly for those interested in pursuing this important component of the DTM.

In addition to the seven core components of the DTM briefly discussed in this paper, teachers are also evaluated on the skill they exhibit in these task areas: Working with Resources, Working with Parents, Professional Activities, Knowledge of Trends, and Knowledge of Content Areas. The implementation of evaluation in the latter task areas has been the most recent effort in the program. Consequently, the available data are considered more tentative than results obtained with regard to the core areas.

Conclusion

The extent to which objectives are attained by the teacher is determined by ongoing observations as well as careful inspection of his Teacher Competency Journal (Eaves and McLaughlin, 1977). The Journal is a 115 page criterion-referenced instrument which asks the teacher to provide information that supports the decisions he has made in the educational process throughout the year. For example, if the teacher decides it is necessary to construct an observation schedule during assessment, the following information must be provided in the Journal: (a) statement of the purpose of the observation schedule; (b) definitions of the behavior to be observed; (c) development of the instrument; (d) a record sheet; (e) pilot normative data collected during the development of the instrument; (f) reliability data. If these requirements are met and reflect competent performance, the teacher receives reinforcing feed-back and an excellent evaluation on the particular objective. If not, constructive criticism is given and the teacher may correct errors before formal evaluation takes place. In all, teachers often provide multiple demonstrations of their knowledge and performance on 323 objectives during an academic experience.

Problems exist which must be overcome. For instance, supervisors of teachers must be extremely competent practitioners of the Diagnostic Teaching Model. Such individuals are hard to locate; the job of training supervisors is also difficult. Determining criteria for the mastery of given objectives is onerous. Although reliability and validity evidence is available, it must be extended. Perhaps the most needed research, but the most difficult to conduct, is the analysis of pupil acheivement when pupils of teachers trained to use the DTM are compared with those of teachers trained in other systems. Other future needs could be enumerated, but they tend to be the sort of time-consuming endeavors any complex system must work through before enjoying widespread acceptance. Although the process is never-ending, and sometimes tedious--even boring--the authors believe it is the sort of undertaking which must be conducted if we, as special educators, wish to gain a bona fide place in the professional community.

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CHAPTER TWO

TASK ANALYSIS AND THE DEVELOPMENT OF TAXONOMIES OF GOALS AND OBJECTIVES

Task Analysis and the Development of Taxonomies of Goals and Objectives

Task analysis, despite being a descriptor of numerous curricula, research articles, and position papers in recent years, has tended to be defined in terms of the orientation of the particular author. It will become clear in a subsequent section of this paper that there are numerous orientations around which the various models of task analysis revolve. Consequently, the following definition which is consistent with the models to be discussed, is offered. *Task analysis is a description of the requisite and prerequisite skills required to perform a particular task.*

Zinn offered a task analysis of the desired behavioral outcome, "Making a telephone call." It is represented in Figure 1.

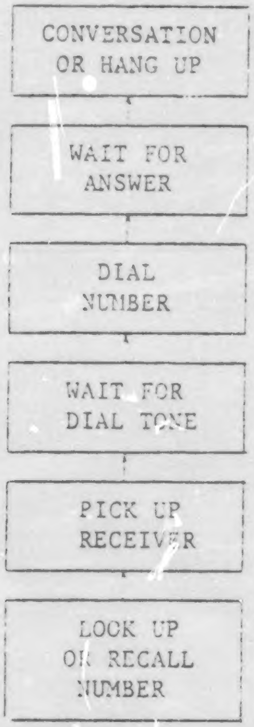
CONVERSATION OR HANG UP
WAIT FOR ANSWER
DIAL NUMBER
WAIT FOR DIAL TONE
PICK UP RECEIVER
LOOK UP OR RECALL NUMBER

Fig. 1. Task analysis of making a telephone call.

It is apparent that the requisite skills for making a telephone call are described in the cubes below the desired outcome. However, to remain consistent with the definition provided, the requisite skills should be further described as objectives along the guidelines offered by Mager (1962).

A number of scholars have focused their attention on the benefits of the task analysis approach (Davies, 1973; DeCecco, 1968; Gagne, 1965; Junkala, 1972; Lettick, 1973; Rawson, 1971; Siegal, 1972; Vallett, 1972). Most authors are consistent with Gagne (1965, p. 24) who suggested that task analysis before a learning situation will facilitate the development of new capabilities. New tasks must be analyzed to determine if the prerequisite skills are presently in the response repertoire of the pupil. If the pupil is capable of the prerequisite skills, then the learning of the new task should procede easily. If prerequisite skills are found lacking, they must be taught or the learning sequence will be "blocked in subsequent trials" (Gagne, 1965, p. 173). In a similar vein Junkala (1972) emphasized task analysis as a more precise definition of readiness. A teacher must know what a child will have to do in a task before he can know if the child is ready to learn it.

The value of task analysis is also seen as an alternative to the "smorgasbord of gimmicks" in teaching (Rawson, 1971; Frank, 1973). Rawson (1971) stated that the teaching of language should be done ". . . in a structured, sequential, cumulative, thorough manner." Seigal (1972) also suggested task analysis as a method of returning to a definition of teaching ". . . in the limited and somewhat confined yet specific sense of imparting knowledge and skills."

Vallett (1972), Lettick (1973), and others have advocated the task analysis approach in teaching exceptional children. Vallett (1972), acknowledging the difficulties of placement of children in special education on the basis of IQ scores, saw task analysis as offering a more precise evaluation of children. With a task analysis prior to assessment, specific instructional decisions can be made which are relevant to the individual child.

It is thus apparent that task analysis is viewed by a number of professionals as being an effective vehicle in enhancing the assessment and teaching of both typical and atypical children. The literature also suggests that task analysis has been used in a number of diverse settings. Brodt (1973) and Martin and Brodt (1973) have described an effective task analysis approach in the curriculum design for hospital corpsmen. O'Connell (1974) has developed a task analysis of self help skills for the retarded. Siegal (1972) has suggested a task analysis for auditory recognition of vowel sounds, cashiering skills, understanding the "more than" and "less than" signs, understanding place values, and developing a tolerance for body contact. Taxonomies of objectives are also available for academic subject areas such as reading (SRA Associates, Criterion Reading) and mathematics (Eaves, 1974; Key Math, SRA).

The next section of this paper is a description of the role of task analysis in systems development. Some of the common models of task analysis will be discussed. Suggestions will then be offered as to how far to break down a skill and the specific steps involved in breaking down a task. Finally, guidelines for evaluating a task analysis will be presented.

Task Analysis in Systems Development

Gilbreth, early in this century, and later Taylor used a task analysis approach in exploring industrial behaviors in an attempt to discover the "best" way of working (Davies, 1973). In the early 1950's the U.S. Air Force utilized this approach to train personnel. The Air Force wished to avoid the time lag between new equipment and the availability of persons trained to use the equipment (Miller, 1962a). Despite a relatively long history of task analysis in some areas, it is only a recent development in education.

Task analysis does not stand alone in education nor in industrial or military strategies. It is part of what has become known as the systems approach. Gagne (1962) considered some of the most important and spectacular developments of the current age to be systems. A system is essentially a unique combination of machines (Gagne's term) into a complex organization whose output exceeds the sum of the parts. For instance, as Gagne suggested, the telephone is not simply a tool for transmitting and amplifying the human voice but is a huge communication system. The system to which Gagne referred is depicted in figure two.

It is apparent from figure two that the early system's major concern was coordinating the integration of man and machine. Indeed, it is within this framework that task analysis had its genesis. The model of task analysis described by Miller (1962a, 1962b) is in direct reference to the system depicted in figure two.

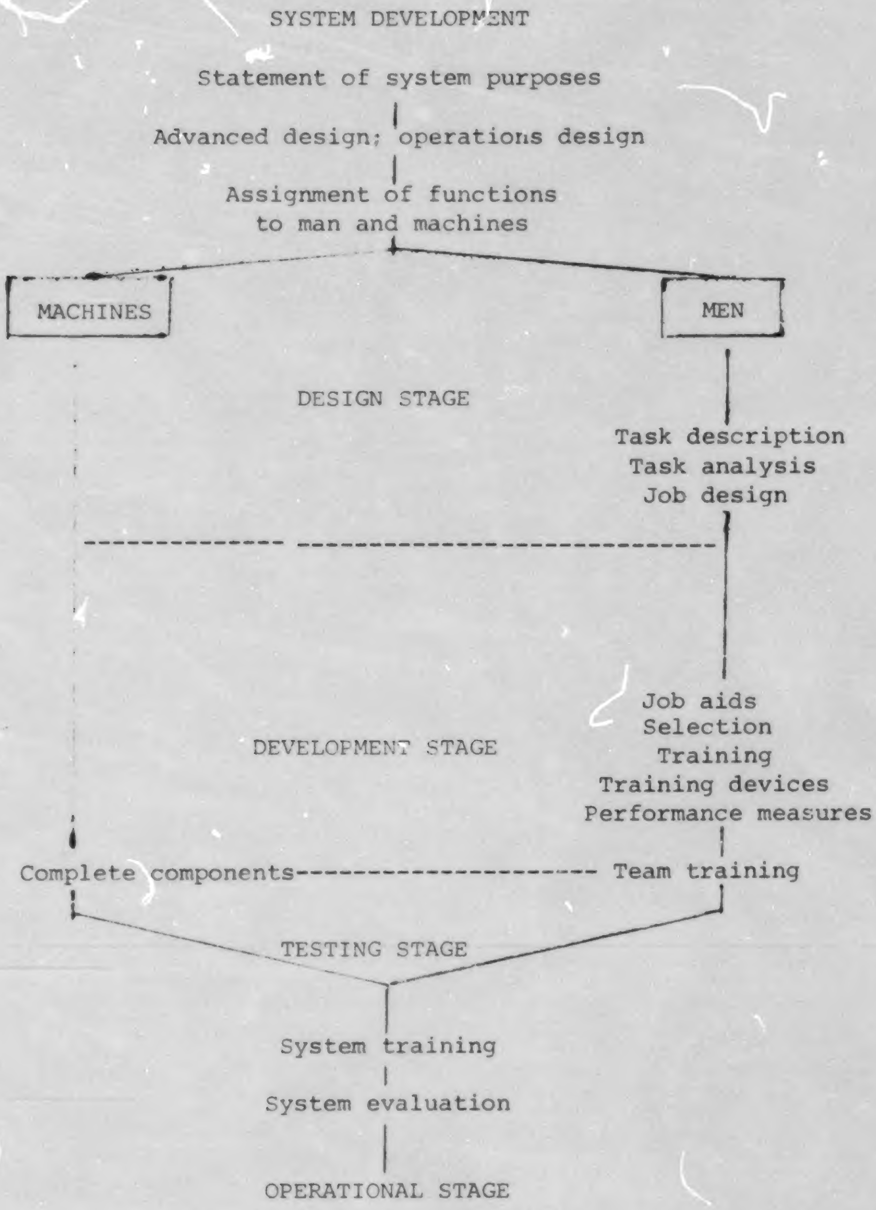
SYSTEM DEVELOPMENT
Statement of system purposes
Advanced design; operations design
Assignment of functions to man and machines
MACHINES
MEN
DESIGN STAGE
Task description
Task analysis
Job design
DEVELOPMENT STAGE
Job aids
Selection
Training
Training devices
Performance measures
Complete components
Team training
TESTING STAGE
System training
System evaluation
OPERATIONAL STAGE

Figure 2. The procedures used in the development of human components of systems and their order of operation in relation to the stages of system development. Procedures used for equipment development are not shown in detail.

It should be noted that to Gagne the system is composed of purposes and goals as well as a design stage. In the design stage the task is described (a statement of requirements) and analyzed (specific behavioral requirements of the task). A more detailed differentiation of task description and task analysis is offered by Miller (1962b, p. 197). It is also clear from figure two that subsequent to the task analysis, a development stage occurs followed by a testing stage and system evaluation stage. Although it is not included in this diagram, most systems include a feedback loop which can signify a needed change in goals, design or development.

Glasser (1962, p. 6) was one of the first professionals to envision an instructional system. A modified version directly relating to school teaching was diagrammed by DeCecco (1968, p. 12). DeCecco's system (after Glasser) is described in figure three.

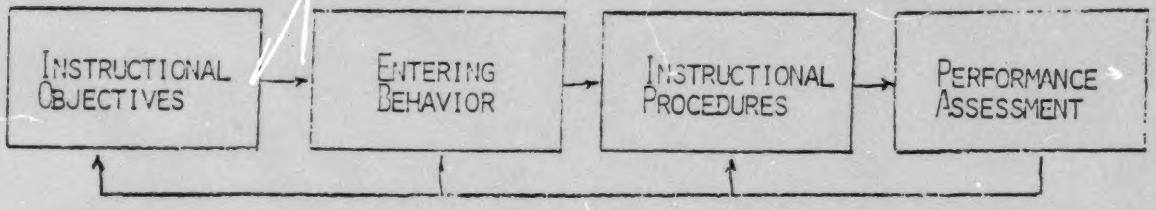

FIG. 3. DE CECCO'S INSTRUCTIONAL SYSTEM.

The DeCecco instructional system can be seen as an outgrowth of the system outlined by Gagne. Both systems have goals and procedures as well as evaluation or final performance assessment. Also in both approaches, task analysis is an integral part.

A more recent and detailed system for education has been outlined by educational technologists Knirk and Gentry (1971). This system, outlined in figure four, clearly demonstrates the position of task analysis in the total operation of the system. (See figure four).

The Knirk and Gentry system has several advantages for educators over the previous systems described. The cube containing task analysis reflects the growing concern of professionals for the need of adequately described tasks. Furthermore, the task analysis is viewed as part of the total system and not sufficient in and of itself. The instructional prescription cube indicates that theoretically, an identical task analysis could be implemented in a number of different ways. Evaluation will often be followed by revision, and this, as the system approach suggests, is to be expected. Finally, the feedback loop is viewed as influencing any one (or more) of the compartments of the system. In possibly more concrete terms, Zinn describes an instructional system as including ". . . all equipment, procedures, materials, facilities, personnel, etc., required to produce learning. The systems approach involves the management of these various elements so as to maximize the learning of the individual . . ."

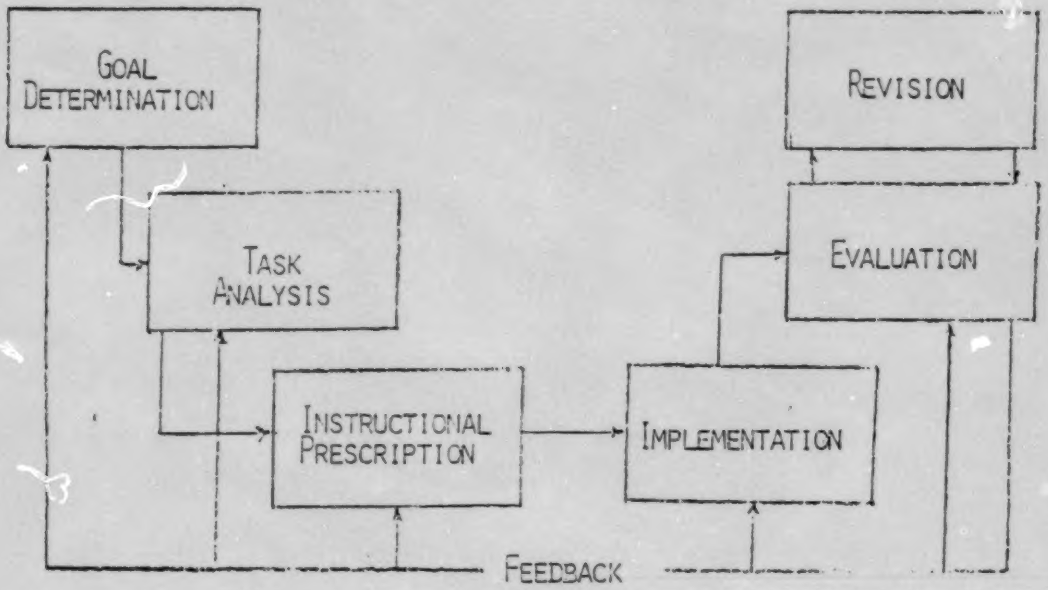

FIG. 4. KNIRK & GENTRY (1971) EDUCATIONAL SYSTEM.

Miller (1962a) warned that task analysis may suggest efficient methods of acquiring specific proficiencies, but it will not prescribe them. Similarly, Gagne (1965, p. 26) indicated that *instruction* may be derived from *analysis* but the terms are not synonymous. Siegal (1972) has even suggested that specific methodology should not be spelled out by task analysts since the teacher should be given considerable latitude in selecting instructional materials.

The instructional system adopted in this journal is outlined in figure five. Consistent with current terminology in special education this system is called The Diagnostic Teaching Model. Unlike the Knirk and Gentry Model, the Diagnostic Teaching Model suggests that the relevant attributes of the child and his environment must be identified before meaningful goals or instructional objectives can be met. Similar to the Knirk and Gentry Model, Task analysis plays a fundamental role in the total model. It is also clear, upon perusal of the flow chart, that feedback mechanisms are extremely important in the diagnostic teaching model.

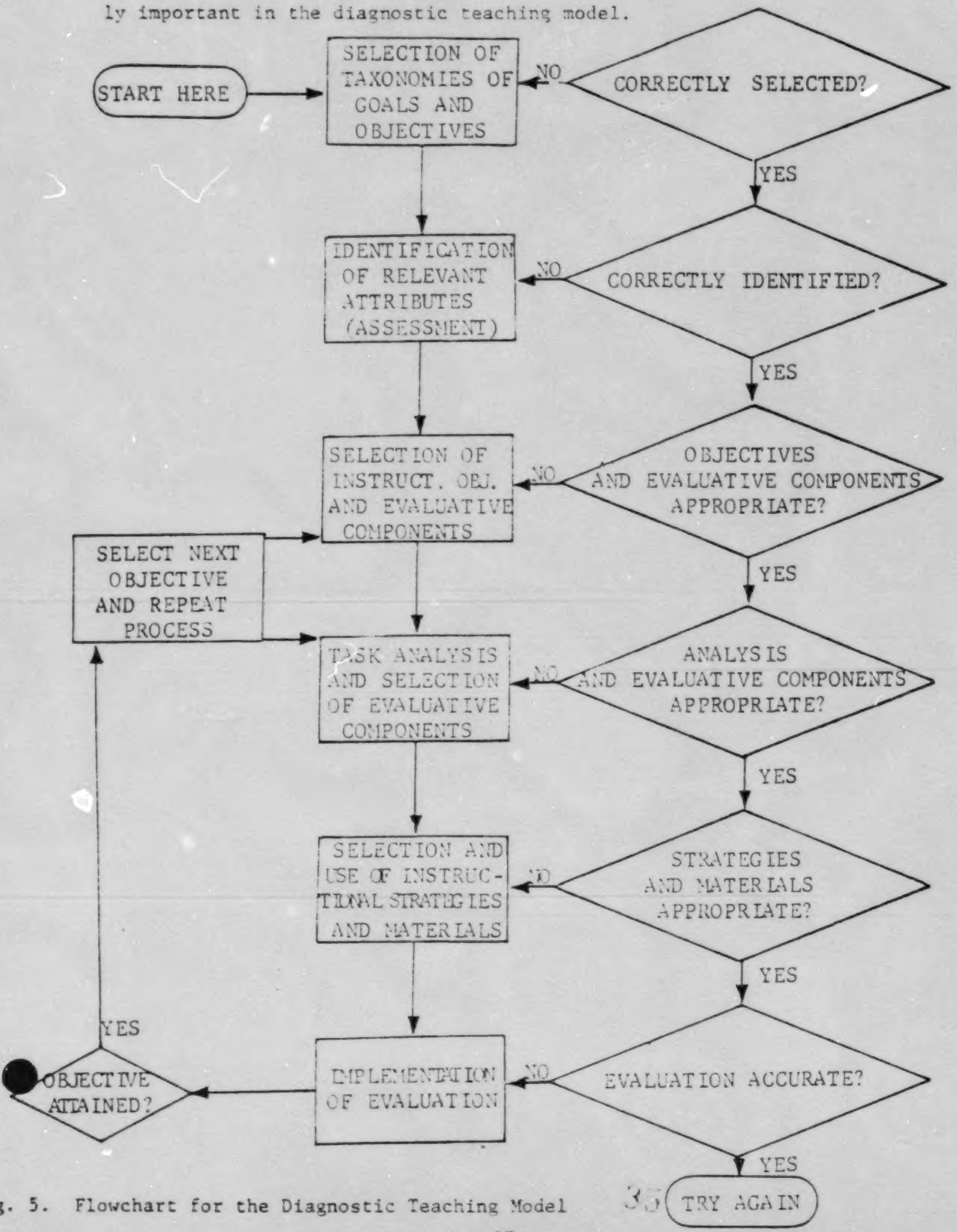
START HERE
SELECTION OF TAXONOMIES OF GOALS AND OBJECTIVES
NO
CORRECTLY SELECTED?
YES
IDENTIFICATION OF RELEVANT ATTRIBUTES (ASSESSMENT)
NO
CORRECTLY IDENTIFIED?
YES
SELECTION OF INSTRUCT. OBJ. AND EVALUATIVE COMPONENTS
NO
OBJECTIVES AND EVALUATIVE COMPONENTS APPROPRIATE?
YES
SELECT NEXT OBJECTIVE AND REPEAT PROCESS
TASK ANALYSIS AND SELECTION OF EVALUATIVE COMPONENTS
NO
ANALYSIS AND EVALUATIVE COMPONENTS APPROPRIATE?
YES
SELECTION AND USE OF INSTRUCTIONAL STRATEGIES AND MATERIALS
NO
STRATEGIES AND MATERIALS APPROPRIATE?
YES
YES
OBJECTIVE ATTAINED?
IMPLEMENTATION OF EVALUATION
NO
EVALUATION ACCURATE?
YES
TRY AGAIN

Fig. 5. Flowchart for the Diagnostic Teaching Model

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In summary, task analysis has been viewed as an integral part of systems design engineering since psychology first concerned itself with integration of man and machine. Systems approaches to education have been outlined, which grew out of the systems development of industrial and military organizations. The Knirk and Gentry (1971) instructional system and the Diagnostic Teaching Model were described with their suggested advantages. The latter model is adopted for this journal. Despite the importance of task analysis in instructional systems, a cautionary note was included, suggesting that task analysis and instructional analysis are independent phenomena (Merrill, 1973). That the systems approach is now infiltrating special education is evident in the models described by Wallace and Kaufman (1973, p. 117) and more recently Guralnick (1975).

MODELS OF TASK ANALYSIS

It was mentioned at the beginning of this review that different definitions of task analysis appear to be generated from a host of different models of task analysis. This section of the review will address itself to a number of approaches to task analysis and with the efficacy of the various approaches.

Miller (1962a), concerned primarily with military tasks, offered one of the first models of task analysis. He suggested that the following information, relevant to the task should be considered in training individuals.

1) Goals of the task
2) Task Relevant Stimuli: Does he need to scan, search, or identify?
3) Retention: Does the task require short-term memory or long-term memory?
4) Interpretation and Problem Solving: To what extent are these skills inherent in the task?
5) Motor Response Mechanisms: How does the task demand that he respond?

Gagne in his The Conditions of Learning (1965) text outlined eight types of learning. In each of the eight types the conditions for learning differ.

Also, the eight types of learning are hierarchical with each step requiring the previous steps as requisites. Hence, a task must be analyzed in terms of the requisite types of learning necessary for the development of the new task. His eight conditions of learning include:

1) "Signal Learning: The individual learns to make a general diffuse response to a signal. This is the classical conditioning response of Pavlov . . .
2) Stimulus-Response Learning: The learner acquires a precise response to a discriminated stimulus. What is learned is a connection . . .
3) Chaining: What is acquired is a chain of two or more stimulus-response connections . . .
4) Verbal Association: Verbal association is the learning of chains that are verbal . . .
5) Multiple Discrimination: The individual learns to make different identifying responses to many different stimuli, which may resemble each other in physical appearance to a greater or lesser degree. . .
6) Concept Learning: The learner acquires a capability of making a common response to a class of stimuli that may differ from each other widely in physical appearance . . .
7) Principle Learning: . . . a chain of two or more concepts
8) Problem Solving . . ." (Gagne, 1965, p. 58-59)

Junkala (1972) viewed task analysis as ultimately a three-dimensional analysis which includes the cognitive, affective and modality-processing demands of the particular task. In his paper, however, he was concerned only with the cognitive dimension. Junkala suggested that the cognitive aspects of a particular task must include analysis of the perceptual, coding and conceptual demands.

Johnson (1967) offered steps in the task analysis of the modality-processing demands of the task. Her initial concern was with learning

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disabled children. Her steps included:

1) Is the task primarily intrasensory or intersensory?
2) What is the sensory modality that is involved?
3) Is the task essentially verbal or non-verbal?
4) What is the level of the task in terms of perceptual difficulty or memory difficulty?
5) What is the expected mode of response?
6) Is the problem one of reception or expression?

Popham and Baker (1970) described instructional sequencing as part of a system they have devised. Instructional sequencing is equivalent to task analysis. They allow the practitioner great latitude in determining the subtasks of a particular skill. The behavioral goals which must be specified are broken into "en route" behaviors. They are concerned with content analysis and behavior analysis. The latter analysis refers to the type of learning inherent in the task. Thus, the Popham and Baker approach borrows some of Gagne's (1965) ideas and incorporates them into a content approach.

Another method for task analysis has been information processing. This is based on the premise that instruction should be related to the information processing necessary for performance (Davies, 1973). This is an approach which may attract physical educators since Whiting (1971) has already viewed the acquisition of ball skills in this paradigm.

The task analysis model offered by Knirk and Gentry (1971) is diagrammed in figure six. In brief, their analysis includes the following:

1) "reducing the goal to its several general objectives
2) restating general objectives as terminal objectives and writing a criterion item for each terminal objective
3) delineating the tasks that make up each general objective
4) writing enabling objectives and criterion items for each of the tasks
5) placing the objectives into a behavioral hierarchy

6) balancing the objectives

7) sequencing the terminal objectives." (1971, p. 58-59)

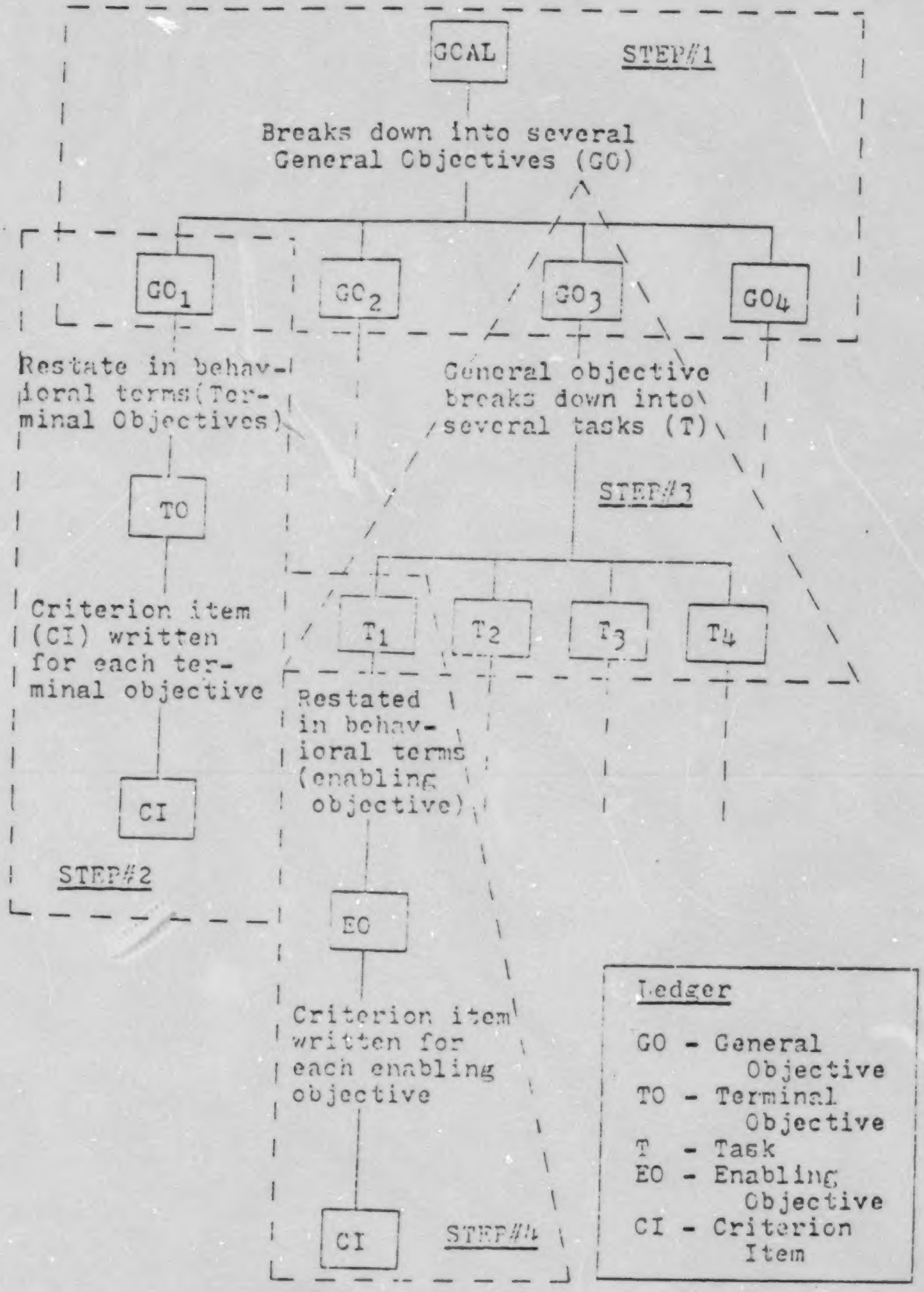
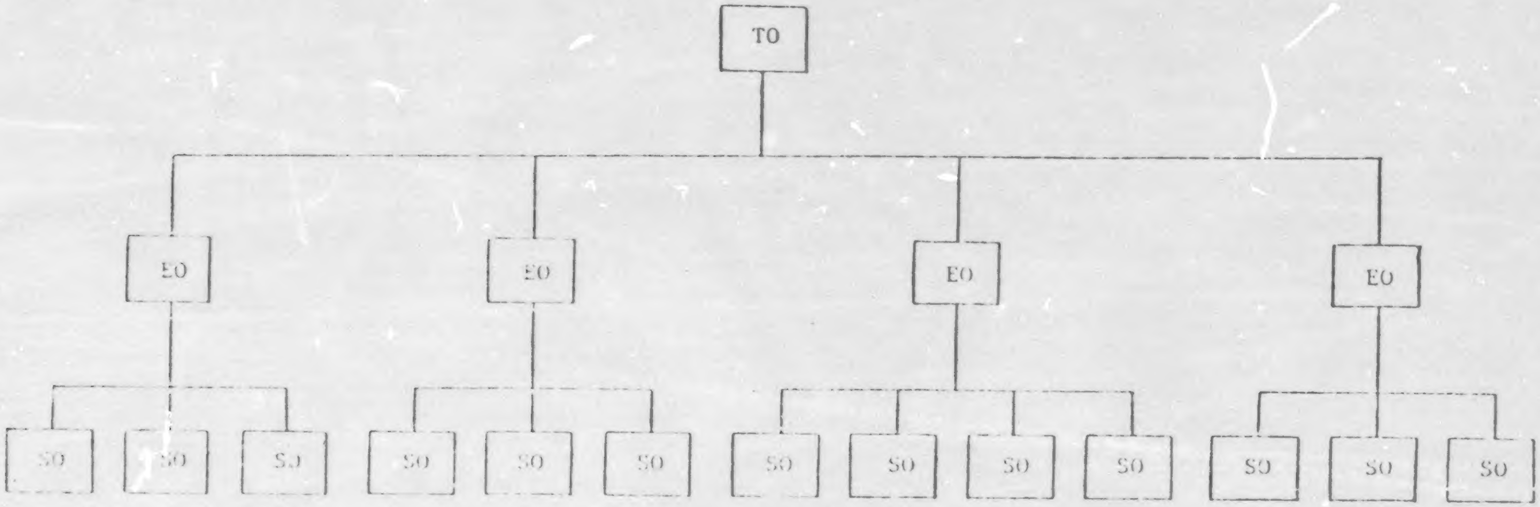

GOAL
STEP#1
Breaks down into several General Objectives (GO)
GO1
GO2
GO3
GO4
Restate in behavioral terms (Terminal Objectives)
TO
Criterion item (CI) written for each terminal objective
CI
STEP#2
General objective breaks down into several tasks (T)
STEP#3
T1
T2
T3
T4
Restated in behavioral terms (enabling objective)
EO
Criterion item written for each enabling objective
CI
STEP#4
Ledger
GO - General Objective
TO - Terminal Objective
T - Task
EO - Enabling Objective
CI - Criterion Item

Figure 6. Task Analysis (Knirk & Gentry, 1971, p.59)


TO
EO
EO
EO
EO
SO
SO
SO
SO
SO
SO
SO
SO
SO
SO
SO
SO
SO

Ledger

TO - Terminal Objective

EO - Enabling Objective

SO - Specific Objective

Figure 7. Behavioral Hierarchy

(Knirk & Gentry, 1971, p. 60)

Once this procedure is accomplished, the authors have posited that a behavioral hierarchy (figure seven) will be generated which suggests the order in which the objectives should be learned. This journal adopts a similar hierarchy approach. Goals are broken into broad objectives, then written, and broad objectives are divided into enabling objectives.

Although a number of models of task analysis have been offered there appears to be a lack of definitive statements as to precisely how to analyze the task. For example, Popham and Baker (1970) as well as Knirk and Gentry (1971) suggest breaking the task into subtasks or subbehaviors. But how many subtasks? Should my task analysis of X be the same as that produced by someone else? Will the task analysis for a gifted child differ from the analysis for a retarded child? Actually, there appears to be some consensus on these points in the literature. The actual analysis, or number of steps is of course important but in the evaluation of the system, the efficacy of the analysis will be noted and can be modified. Miller (1962b) stated that task analysis is a heuristic description of activities and, as such, is dependent upon the inventiveness and creativity of the analyst. Davies (1973) has described the seeking of the "one best" method of analysis to be a fruitless search. Educator Siegal (1972) felt that each step should simply prepare the student for the next step. This was the primary requirement for a valid sequence. Similarly, Lettick (1973) stated that steps should be in the largest units the child can take. If the task proves impossible, break it down farther. It appears, therefore, that although some controversy between models of task analysis exists, there is reasonable consensus that once within a model the actual analysis will vary depending upon the needs of the students and inventiveness of the analyst. The ultimate efficacy of the sequences prescribed must be evaluated by the system as a whole. As mentioned in the previous section, the feedback from the performance assessment is important in modifying the task analysis, hence, change is a part of the system; thus, no best way will be apparent.

The comments in the previous paragraph should not be construed to imply that any task analysis is adequate. There are minimum guidelines in the literature which will be alluded to in a subsequent section. The question at hand now, however, is whether there is any supporting literature for the efficacy between models. This writer was unable to find any empirical data which might suggest the benefits of one model of analysis over another.

Sherrill (1972) has delineated two basic forms of analysis taxonomies. A process taxonomy and a task and skill analysis taxonomy were identified. The perceptual-motor approach to the remediation of learning problems or information-processing are examples of the former while Knirk and Gentry (1971) and Popham and Baker's (1970) approaches are examples of the latter. This two part separation appears to be consistent with the two theoretical models of diagnostic-prescriptive teaching identified by Ysseldyke and Salvia (1974). Indeed, diagnostic-prescriptive teaching is considered as a systems approach to teaching. Ysseldyke and Salvia advocate the acknowledgement of a processability training model and a task analysis model of diagnostic-prescriptive teaching. The authors provide evidence relating to the relevance to instruction, reliable and valid assessment, diagnostic-prescriptive links and benefits in accountability which supports the efficacy of the task analysis approach. Hence, although some evidence questions the value of the process task analysis, there appears to be no empirical evidence in support of any of the specific tasks and skill analysis taxonomies.

A number of models of task analysis which have appeared in the literature have been described, albeit briefly. It was suggested by Sherrill (1972) that the majority of the models could be considered either a process approach or a task and skill analysis approach. It was argued that Sherrill's dichotomy was closely related to the two models of diagnostic-prescriptive teaching identified by Ysseldyke and Salvia (1974), which clearly supported the task and skill analysis approach over the processing approach. Yet, despite the presumed efficacy of the task and skill analysis models there does not appear to be any data available in support of any of these models over each other. Finally, there appears to be some consensus that once a particular model has been chosen, the specific breakdown of the task will be determined by the needs of the student and in the creativity of the teacher.

TASK ANALYSIS: SUGGESTED STEPS AND EVALUATION

A number of models of task analysis have been identified and briefly described. There appears to be support for those models which emphasize a task and skill taxonomy over a process taxonomy. However, some of the task and skill taxonomy approaches (Popham and Baker, 1970; Wallace and Kaufman, 1973; Frank, 1973) do not appear to provide sufficient guidelines for the practitioner. These models simply indicate that a task should be analyzed into its component parts. Since it provides specific guidelines, the model of task analysis offered by Knirk and Gentry will be adopted in modified form.

Guidelines

1. Establish a major goal for the attribute area. This may be stated in general terms devoid of specific criteria of performance.
2. The major goal should then be broken into broad skills based on inspection of
    a. empirical research
    b. observation of a skilled performer
    c. consultation with subject matter expert
    d. consultation with curriculum guides
    e. consultation with other teachers
    f. asking, what prerequisites and en route behaviors does one require to be able to perform the major goal.

If the major goal is particularly vague, Mager (1970) has offered five steps to more precisely delineate the goal.

3. Restate the broad skills as instructional objectives and write a criterion item for each. In other words, an instructional objective (Mager, 1962) with stated performance, conditions under which performance is to occur and criteria for success must be established.

4. Arrange the broad skill objectives in order of presentation:
   a. logically
   b. according to the sequence suggested by the information sources.

5. Tasks must then be specified which make up the broad skills. These tasks are often called enabling skills.

6. Arrange the enabling skills in order of presentation.

7. Write the enabling skills as short term objectives as per 3 above.

8. Break down the enabling objectives into more specific behaviors if required.

9. Write specific objectives (as per 3 above) for the specific behaviors.

10. Evaluate all objectives with the checklist to follow.

11. Place the task analysis in the system adopted, specify and implement instructional strategies and materials, and evaluate.

These guidelines should result in an analysis similar to figure 7.

It was previously indicated that empirical data was non-existent (save the process vs. task dichotomy). However, the following check-list has been published which can be used by the practitioner prior to implementing the analysis in a system. The list is from Thiagarajan (1973, cited by O'Connell, 1974).

I. "Interrelationships among objectives

   1. SUFFICIENCY

      Does the list include a sufficient number of objectives to assure the performance of the main task or the attainment of the goal?

   2. NECESSITY

      Is each objective in the list necessary for the performance of the main task or the attainment of the goal?

3. LACK OF REDUNDANCY

Does the list avoid restating the same objective in different formats?

4. LACK OF TRIVIALITY

Is each objective higher, or more complex, than the stated or implied entry behavior of the target sequence?

5. SEQUENCE

Are the objectives arranged in an orderly sequence, if there is one?

II. Extrinsic evaluation

6. LEVEL OF LEARNING

Is the objective stated at the highest level of learning desired by the subject matter expert?

7. STEP SIZE

Is the size of the task implied in each objective optimal for the target students?

8. LEVEL OF SPECIFICITY

Is the amount of detail in each objective appropriate to its reader (teacher, student, test constructor or instructional designer)?

9. LANGUAGE

Is the vocabulary and style of language suited to the reader of the objective (teacher, student, test constructor or instructional designer)?

10. BREVITY

Does the objective avoid all unnecessary verbiage?

III. Intrinsic evaluation of individual objectives

11. BEHAVIORALITY

Does the objective specify an unambiguous student performance and/or a product of such performance?

12. RANGE

Does the objective specify the range of situations in which the student is to perform in terms of the object of the behavioral term, environmental conditions, physical demands and/or content specification?

13. AIDS

Does the objective specify the tools, equipment, reference materials, job aids and expert inputs which the student may or may not use?

14. STANDARDS

Does the objective specify the minimum criteria for acceptable student performance in terms of such factors as time limit, percentage of accuracy, error tolerance, essential terms or concepts, process standards and expert approval?

15. PROCESS INDEPENDENCE

Does the objective avoid specifying or implying any instructional or learning process? (p. 28)"

Although the guidelines and procedures within may appear formidable for the task analyst, there are suggestions in the literature for facilitating the process of task analysis. Lippert and Drucker (1973) suggest a brainstorming approach with individuals writing down objectives on index cards called Lippert Cards. A designated leader then selects cards one by one and the total group discusses relevancy, clarity, etc. Also Thiagarajan (1973) has attempted to ease the pain of task analysis by inventing a game called TAG. Essentially, teams win points for original suggestions and lose points for lack of clarity or redundancy.

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CHAPTER THREE

ASSESSMENT IN ACADEMIC PROGRAMS

Assessment in Academic Programs

Assessment of the visually impaired, as with any exceptional group, can be approached from many different perspectives. Traditionalists usually advocate the use of norm-referenced tests as the most effective means available for assessing academic functioning. The more avant-garde members of the field aver that criterion-referenced tests produce results that have more utility in academic programming. In this chapter, the authors attempt to place the variety of assessment methods we now have available in their proper perspective. As often happens when professional groups enter a period of change, imbroglios develop and issues are presented as though they were either black or white, with no shadings of gray. The truth is generally somewhere in the gray area. The major portion of this chapter outlines a systems approach for the assessment of the child and his environment. The second part focuses on what can be done to facilitate the assessment of visually impaired youngsters.

A Systems Approach for the Assessment of the Child and His Environment

The addition of the term, environment, in this section of the chapter is, the authors believe, the first formal response to Lillys (1970) suggestion that "...we move from defining 'exceptional children' to defining 'exceptional situations within the school'." His suggestion should be applauded because it takes into account the obvious possibility that the source of a school problem is not necessarily a pernicious "superego," a bedeviling "mental block," or some other assumed perjorative entity which is currently defiling the child's body. The implication of this view is that the assessor must go well beyond collecting ratings, test responses, or observation data concerning the child. The same sort of data collection must go on with reference to people, settings, materials, and specific situations within the child's environment. The following discussion shows how both child and environmental factors can fit into a systematic assessment model.

A Rationale for Decision-Making

All assessment methods are used to collect estimates of the current status of the person or situation that is being assessed; they provide a means for gathering evidence of many kinds regarding the variables included in the assessment method. Ideally, the method that provides the best estimate of current status is the method of choice for any specific assessment question that is asked. However, the ideal is seldom the context within which assessment is conducted.

Suppose that we were interested in a child's current performance in the use of standard English grammar on the school playground. What is the method of choice when such a question is to be answered? From one point of view, the method that would provide the best estimate would be one that employed a technique organized in such a way as to record every utterance of the child for some rather lengthy period of time. These utterances could be analyzed later and a very accurate estimate could be made with regard to the child's typical use of English grammar on the playground. On the other hand, we could ask the youngster's teacher for her opinion about his grammatic behavior on the playground. This could be accomplished using a loosely structured interview technique or by requesting that she complete a rating scale or questionnaire on the subject. Or, we might administer a standardized test purported to measure the examinee's use of English grammar and employ the results to predict that behavior in the playground setting. In a real situation, is the method that provides the best estimate also the method of choice? If not, on what criteria do we make the decision?

The answer lies in how interested we are in pinpointing the child's typical behavior in the situation. Frankly, there are few, if any, reasons we would want such an accurate estimate of playground grammar as is provided by the first method. We would probably be satisfied with the estimate derived from one of the other methods under most circumstances. The answers to three highly related questions enter into this decision: (a) how important is it that the person being assessed show competence on the variable to be estimated? (b) how accurate must the estimate be in order to be considered accurate enough? (c) how much time, expense and effort can be devoted in gathering data for the estimate?

Importance of the Variable

While all assessment questions should be directed to important variables, it is true that some important variables are even more crucial than other important variables. For instance, one reason why handwriting skill is frequently shunted into a secondary role in the general classroom scheme is probably because most educators today simply don't consider the skill as crucial as basic arithmetic or reading skills. That minimal legibility is usually accepted can easily be shown by randomly examining the handwriting of practicing professionals in most areas of study. Whether or not one agrees with the example, most professionals probably can construct a hierarchy of skills based on their presumed importance to the child and his future functioning in the real world. Because of this, assessment of some variables takes precedence over others; that is, the more important the variable, the more accurate the estimate must be, and the more time, expense, and effort we are likely to devote in gathering the data for the estimate.

Accuracy of the Estimate

Although the role of accuracy of the estimate is presumably fairly clear by now, an intervening factor requires further discussion of accuracy and our ability to make highly accurate estimates. Depending on the breadth of the assessment question, we are more or less able to provide accurate estimates. For example, consider the question, "Can the child write the correct answer when auditorily presented with the addition problem, 6 + 3 = _?" By repeatedly sampling a youngster's behavior, we can estimate his usual response to this stimulus with accuracy equivalent to most reasonable expectations. However, when we attempt to measure the child's typical behavior with respect to the domain like arithmetic, we are doomed to achieve a less accurate estimate. Theoretically, we could individually assess every major and minor function in the area of arithmetic, but the time, expense, and effort required would make this a process to be eschewed during initial assessment. Consequently, although the estimate sought is a very important one, when broad-based questions are asked, we are usually limited to relatively small (less than ideal) samples of the child's behavioral repertoire or other environmental events of interest. Of course, such a limitation neither vitiates the requirement that the assessor select the most accurate method available, other factors being equal, nor does it neutralize the advantages of collecting long term, formative assessment data.

Time, Expense, and Effort

The rationale for considering how this variable fits into the selection of assessment methods has been explicitly discussed in the two previous sections. One additional point should be made, however. Too frequently, the time, expense, and effort required by various assessment methods becomes the overriding factor in determining the method of choice. With recognition that there are absolute limits on the time, expense, and effort that can be spent in assessment, under most conditions, this variable should be the least decisive of the three. If the question being asked is a crucial one, it is often worth the extra time, expense, and effort it takes to get a more accurate estimate.

Variables of Importance In Assessment Process

An assessor must be very knowledgeable concerning three variables that form the foundation of his decisions: (a) the attributes or characteristics of the child and his environment that are relevant to his future well being, (b) the resources that are available which can be used as aids during the assessment process, and (c) the assessment methods which exist that can be used to help investigate the attributes of the child and his environment. This is especially true here, since assessment is viewed as a unique process for each child.

Relevant Attributes

Depending on circumstances (e.g., age, sex, degree of visual impairment), the particular cluster of relevant attributes may vary somewhat, but generally, assessors are interested in the domains of language (including listening, speaking, reading, spelling, and writing skills), mathematics, social-emotional adjustment, physical development (including the senses, health, and fine and gross motor skills), intellectual ability, and environmental factors in the child's home, classroom and community. All of these attributes should be of interest to the assessor whether he is a baseball coach, school nurse, or science teacher because they potentially interact with one another, making the assessment of each important to all the others. For instance, it is common for a child to experience academic and motor difficulty because his vision is mildly impaired. Likewise, we have seen social-emotional and academic problems that stem from overly solicitous or overly rigid parents and teachers. Mercer (1973) and others have clearly demonstrated how environmental circumstances affect measures of IQ. Examples of interactions like these are endless.

Further, the assessor must have a very clear understanding of what the attributes "reading", "mathematics", and so on mean to him. This understanding should be in the form of a taxonomy of goals and objectives which may be adopted from the work of others or may be a synthesis of all the assessor has learned from readings and experience. In such taxonomies attributes are broken down into broad skills, broad skills into enabling skills, and so on, then highly discrete behavior is specified in objectives. Although no extant hierarchy of skills has proven generally accepted by all, unless the assessor has some such hierarchy in mind as he assesses a child, he will do little more than collect a conglomeration of estimates which follow no logical sequence and cannot be interpreted in any integrated way. It is not within the scope of this chapter to present examples of extant taxonomies, but they are available to educators for several domains (e.g., adequate taxonomies of reading have been published by Science Research Associates and Random House).

Available Resources

There are at least five types of resources the assessor can use to help him gather data. The types and a partial list of examples include: (1) individuals in the school (e.g., former and current teachers, school psychologists, guidance counselors, school nurses, social workers, administrators, lunchroom workers, peers); (2) individuals in and near the home (e.g., parents, siblings, other relatives, the child himself, neighborhood children and their parents); (3) community agencies (e.g., mental health clinics, counseling services, Easter Seal Society, educational diagnostic clinics, local associations for handicapped children); (4) independent professionals (e.g., family physicians, neurologists, psychiatrists, otologists, dentists, family counselors); (5) literary resources (e.g., textbooks, professional journals and magazines, reference books). In some cases the resource can actually gather data for the assessor (e.g., school psychologist); in other instances the resource contributes the data (e.g., sibling); finally, some resources provide information which leads to better decisions concerning the assessment strategy (e.g., reference books).

Assessment Methods

Eight methods have been identified by the authors that can be used by assessors to collect information about any given child and his environmental circumstances. Below are descriptions of the methods and some comments regarding their usefulness:

1. *Inspection of Previously Collected Data* refers to the perusal of anecdotal notes, prior test results, physical examination reports, etc. that are contained in the child's record files. It is important to recognize that there are usually several files for any particular child and each may contain information worthy of collection (though it may be spotty or incomplete). A review of available resources will provide clues concerning the possible locations of these files. One cannot assume that those responsible

for the child will automatically identify the locations of the previously collected data; frequently, the assessor must systematically ask whether or not the data are available and, if so, where.

2. Informal Consultation may be used with resources who know things about the child that the assessor does not know. Although there is no concerted effort to prepare for informal consultation and the information is not systematically obtained with a clear-cut guideline in mind, it may still yield valuable results (e.g., clues for further assessment). The method requires little time, but the accuracy of the information must be held suspect without additional support.

3. Structured Interviews may be used for either specific or generic purposes. Advance planning with respect to the purpose and guidelines of the interview is the main key to the effective use of the method. Some common purposes include gathering information about the domains within which the child has difficulty, acquiring a medical and/or family history, and determining what resources have previously collected information about the child and his environment. Structured interviews require relatively little time, but the data obtained is only as good as the assessor's ability to ask the right questions and the resource's ability to provide helpful answers.

4. Screening Devices in the form of questionnaires, rating scales, checklists, and inventories comprise the last of the "quick and dirty" assessment methods (i.e., methods that gather data in a hurry, almost invariably through report). As with the previous methods, screening devices like the Behavior Problem Checklist and the Self Help Skill Assessment Checklist are efficient instruments, but the accuracy of the estimate may vary widely depending on the respondent's skill in rating as well as the reliability and validity of the device itself.

5. Norm-referenced Tests provide samples of the examinee's behavior, usually collected in an optimal setting, that can be compared to his age or occupational peers in some specifiable population. Some may wish to classify these tests as "quick and dirty", much as the foregoing methods were categorized. The charge is certainly justified in many ways, but all such instruments, as they have been defined here, do have the advantage that the estimate is the direct result of the behavior of the one being assessed and not the result of someone's opinion about the behavior. It must also be recognized that the terms, norm-referenced test and criterion-referenced test, in this sense, are not mutually exclusive. The KeyMath Diagnostic Arithmetic Test clearly shows how one instrument can attempt to serve both purposes. Admittedly, because of the nature of the two types of tests (i.e., one stratifies examinee's scores from highest to lowest, the other seeks to determine whether or not objectives have been mastered by the examinee), the constructor must lean heavily toward one purpose or the other. Nevertheless, it is presumably not useless to obtain an estimate of how the child faired in comparison to his peers, even when the test is primarily intended to estimate absolute mastery of objectives. A final advantage of norm-referenced tests is that they offer suggestions for more specific assessment, in spite of the fact that they seldom say much about functional behavior in settings within the natural environment (e.g., classroom, home, community). And, like the other methods presented so far, they are efficient.

6. Criterion-referenced Tests are precisely the same as norm-referenced tests but for two characteristics: (1) they do not have normative data that can be used for comparative purposes; (2) they are often developed by individuals who have little competence in test construction. While the first characteristic is not a serious problem, the second is an insurmountable

disadvantage. Too frequently, advocates of criterion-referenced tests forget that the factors which govern the construction of such tests are very similar to those by which norm-referenced tests are judged[2]. Depending on length and the specific items within the test, they may attempt to measure global domains (e.g., mathematics) or very precisely stated specific objectives. If they are well constructed, criterion-referenced tests can be far more useful for some purposes than the best norm-referenced test available.

7. Systematic Observation refers to the collection of assessment data as the behavior to be measured spontaneously occurs, usually in the natural environment. Although global inferences about behavior can be derived from such data (e.g., classroom climate), the recent trend has been toward the observation of relatively discrete behavior (e.g., out of seat, talk outs). Like any other assessment method, observation can be carelessly done, to the point that "data" become little more than anecdotal notes about what the assessor supposes he saw occur. Under these circumstances, the more appropriate name of the method used is screening device. Other sources present a thorough description of the factors that govern the construction of useful observation systems (Bersoff, 1974; Medley & Mitzel, 1963; Wright, 1960); therefore, these factors will not be discussed here. However, it is worth noting that systematic observation, as an assessment method, does have a well-developed base on which the efficacy of any particular observation system may be judged. Consequently, the assessor should have a firm grasp of this knowledge base before attempting the wide spread use of the method.

8. Referral (Request for Services) can be used to good advantage if time is not crucial. Depending on the person whose services are requested, any of the other methods may be used in data gathering. For instance, a

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[2] c.f. Gronlund (1965); DeCecco (1966)

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school psychologist might be asked to administer a general achievement test or a colleague might be requested to observe systematically to obtain information about the teacher's quality of interaction with the child. As a consequence of the diversity of possible requests, estimates derived from this assessment method will vary in utility according to the specific procedure or technique employed.

From Mush Through Melon to Rock

In any assessment endeavor that purports to view the whole child, there exists the immediate problem of determining how to do so. The authors have contended that criterion-referenced measures are not the total answer. Their major strengths, as they are currently presented in the literature, seem to lie in the formulation of enabling objectives for the child, the bottom line of assessment, so to speak. They are typically far too inefficient to accommodate situations in which one knows very little about the child and his circumstances. If we cannot realistically assess every enabling objective we consider desirable for the child's future well-being, what alternative do we have?

The answer is that during the early part of assessment we must be willing to accept evidence of relatively low power, which at the same time is highly efficient in terms of time, effort, and expense required to collect it. As assessment progresses, less efficient methods can be adopted that provide evidence in which we can place a great deal of confidence. This view is similar to the one offered by Yarger (1974). Although the orientation of this paper is different, we are indebted to him for his terms and general point of view.

Figure 1 illustrates a scheme for the estimation of the quality of evidence gathered during the assessment of the child and his environment.

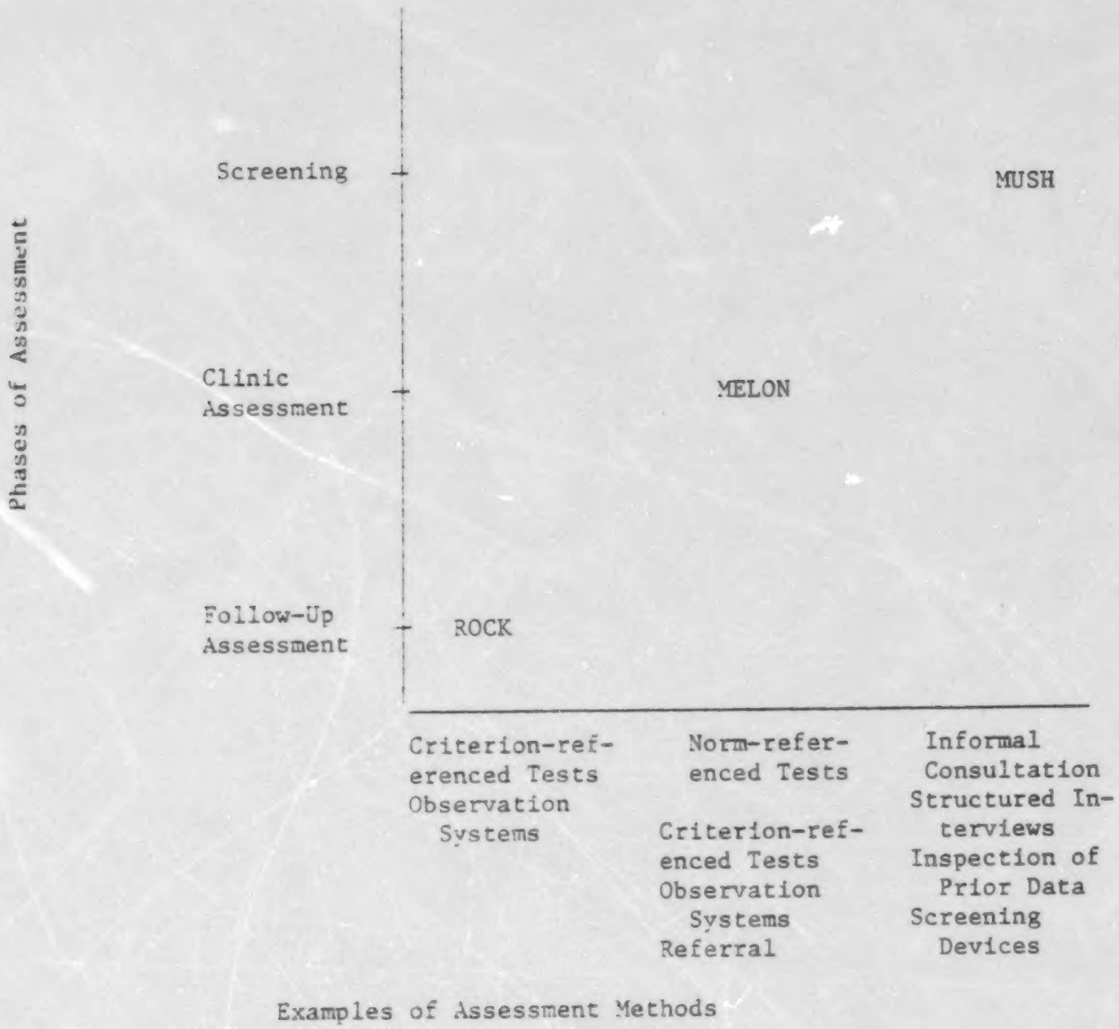
Phases of Assessment
Screening
Clinic Assessment
Follow-Up Assessment
MUSH
MELON
ROCK
Criterion-referenced Tests
Observation Systems
Norm-referenced Tests
Criterion-referenced Tests
Observation Systems
Referral
Informal Consultation
Structured Interviews
Inspection of Prior Data
Screening Devices
Examples of Assessment Methods

Fig. 1 A scheme for the determination of the absolute quality of evidence gathered during the assessment of the child and his environment.

Adapted from Yarger, 1974

In the figure, the levels of quality of evidence can be defined as follows:

1. Mush - evidence that may be rather inaccurate, is usually summative, and allows only tentative conclusions at the attribute level.
2. Melon - evidence that is moderately accurate, usually either summative or intermittently formative, and allows fairly definite conclusions concerning attributes and broad skills.
3. Rock - evidence that is highly accurate, intermittently or continuously formative, and allows rather precise conclusions regarding enabling skills.

The levels of quality actually cut across the three phases of assessment (i.e., screening, clinic assessment, follow-up assessment). By this it is meant that any level of quality may be collected during any phase of assessment in spite of the fact that each phase is characterized by one evidenciary quality level. It should also be noted that the terms depicting the three quality levels are not perjorative in nature. Yarger was right in his reference to research and evaluation activities and it is also true here that, "...no claim is being made for the absolute superiority of one quality level over another. Rather, each level of evidence must be judged by the motivation for its procurement as well as its intended use."

Screening (Mush)

Evidence collected during screening is farther removed from the specicification of enabling objectives than any other data collected during assessment. Its main purposes are to uncover the views of those who have prior knowledge of the child and his work and to gather some preliminary evidence which will guide later assessment decisions. Screening evidence is characterized by:

1. Its use of opinions and prior records as a data base.
2. Its broad scope, which includes all the attribute areas previously listed.
3. Its use of informal consultation, structured interviews, inspection of previously collected data, and screening devices as assessment methods.

4. The efficiency with which data are collected.

5. The tentativeness of the conclusions which can be drawn from most sources of information (hence the term "mush").

6. The opportunity provided for the collection of environmental information (e.g., attitudes, expectations, prior instructional strategies).

Although screening evidence is often "mushy" with respect to instructional decisions that can be made as a result, it does possess two advantages which justify its use. First, it provides the assessor a picture of those resource people who have had the most contact with the child in the past. Thus, the realism with which parents view their child's successes or failures can be observed, the skill with which the child's former teacher selected materials can be determined, peers' attitudes toward the child may be polled, and so on. Second, screening helps to generate hypotheses about those attributes of the child which are most in need of improvement as well as rule in or rule out some attributes as candidates for intensive remedial help. The inspection of previously collected data frequently serves this latter function, if the data is of the "melon" or "rock" variety.

Screening then, results in two lists. The first list contains the attributes considered to be strengths concerning the child and his environment. The second contains those attributes considered as weaknesses. Of course, many of the designations are necessarily tentative at this stage and require clinic assessment to support or deny them.

Clinic Assessment (Melon)

The main function of clinic assessment is to estimate the current status of the attributes that were tentatively identified as strengths and weaknesses during screening. The broad skills which underly these attributes are assessed during this phase as well. Clinic Assessment is characterized by:

1. Its use of direct behavioral data as opposed to the opinions of others.

2. Its "telescopic" narrowing down of possible points for intervention later on.

3. Its use of referral and relatively broad-based norm-referenced tests, criterion-referenced tests, and systematic observation as assessment methods.

4. The efficiency with which the data is collected.

5. Its use of optimal and "simulated" environments as the primary settings for data collection.

Clinic Assessment fills an intermediate position between the three assessment phases. Although the data are generally as good as or better than those collected during screening, they are seldom as worthwhile instructionally as follow-up assessment, hence, the term "melon". It should be mentioned here the results of the clinic assessment are not viewed in isolation; rather, the interpretation of the results is an actuarial process in which all currently available data (including those gathered during screening) are taken into account. Therefore, as evidence is accumulated, "mush" may turn into "melon" and "melon" into "rock".

There are two major outcomes to clinic assessment. First, more confidence can be placed in a revised list of strengths and weaknesses (at the attribute level) than was previously possible. Second, important evidence is gathered concerning the broad skills underlying each attribute. Such evidence leads the assessor to yet more specific hypotheses about enabling skills to be tested during follow-up assessment.

Follow-Up Assessment (Rock)

The major purpose of this phase is to estimate the current status of the enabling skills identified as potential strengths and weaknesses at the end of clinic assessment. It is very important at this stage that a "lowest functional level" be established to preclude the possibility that instruction will begin on an enabling skill that is beyond reasonable expectation for the one who is to be instructed. Below are the main characteristics of follow-up assessment:

1. It uses direct behavioral evidence exclusively.
2. It documents the need for instruction concerning specific enabling skills.
3. It uses only precise (narrow-based) criterion-referenced tests and observation as assessment methods.
4. It is relatively inefficient in terms of time, effort, and expense.
5. Assessment data are collected solely within the child's natural environment.

From a behavioral point of view, data collected during follow-up assessment are the most valid of all. This is because behavior is assessed so frequently and in such small "bits" that there can be little doubt that it represents the construct or enabling skill in question (DeCecco, 1968). Consequently, such evidence can usually be considered as "rock hard" in Yarger's terms.

The most important outcome of the follow-up assessment is a profile of the behavioral strengths and weaknesses of the child and his environment. Weaknesses can then be strengthened systematically by specifying enabling objectives for each weak enabling skill, selecting and implementing instructional strategies, and evaluating their efficacy. Follow-up assessment data serve a valuable function during evaluation because they become the baseline used for comparison with formative data collected during instruction. Used this way, data for evaluating instructional strategies become "rock" type data instead of "melon" or "mush" as is so often the case.

Summary

In an attempt to place available assessment methods in perspective, an alternative assessment model was presented. This model effectively allows the assessor to winnow the multitude of attributes, broad skills, and enabling skills into strengths and weaknesses of the child and his environment. When the model is applied, less efficient assessment methods which require the collection of formative data (e.g., criterion-referenced tests and

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systematic observation) are used only for those attributes and broad skills previously shown to be in crucial need of improvement by more efficient assessment methods.

Assessment of Visually Impaired Youngsters

The prevalence estimate of visual impairment among school-aged children is 0.1% (U.S. Office of Education, 1975). Since there are so few visually impaired children, it is not surprising to find that there exist few adequately constructed assessments for use with these youngsters.

With regard to norm-referenced instruments, there are two major problems to overcome: (a) commonly used norm-referenced instruments contain many visually "loaded" items, effectively preventing the visually impaired from demonstrating their knowledge and skill; (b) available instruments rarely have norms based on the visually impaired population. Although the contrary is not unheard of, psychometricians generally overcome the temptation to apply visually loaded tests to visually handicapped children. The second problem is more commonly abused by assessors. For example, although there are no norms collected on the visually impaired population, Bauman (1972) comments, "One of the best illustrations of (a) test we can use without change, is the verbal scale of the Wechsler Adult Intelligence Scale . . . and in part for this reason is the most used of all the mental measures with blind clients (p. 219)." According to the Standards for Educational and Psychological Tests and Manuals published jointly by the American Psychological Association, the American Education Research Association, and the National Council on Measurement in Education (1974), such practices are to be eschewed by assessors. In short, tests should be normed on samples of individuals whose characteristics are representative of the individuals who will be assessed with the test later on.

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CHAPTER FOUR

SELECTION AND USE OF INSTRUCTIONAL STRATEGIES AND MATERIALS

Selection and Use of Instructional Strategies and Materials

A great deal is known about how children learn and how they are motivated. If it is true that education has been unsuccessful in training youngsters for adult achievement and happiness, we must not claim that it is because we know too little about learning and motivation. Many disciplines (e.g., psychology, child development, educational psychology, education, sociology) have contributed to our understanding of learning and motivation; research efforts by some investigators date back over two hundred years (Kanner, 1964). Special educators have added to our knowledge considerably, exemplified by the work of Blake (1974, 1976), in which she draws together what is known about children's learning. Behaviorists (e.g., B. F. Skinner and Albert Bandura) have laid the groundwork which explains how individuals are motivated to perform work they are capable of doing. Educators and special educators have extended that knowledge (e.g., N. G. Haring and Richard Whelan). It is the author's position that, if teachers consistently apply what is already known about effective teaching, they will be highly successful in preparing students for effective adulthood.

In this chapter the core of effective teaching will be described. The description will come in two parts: general conditions which influence learning and motivational conditions that influence performance.

General Conditions Which Influence Acquisition, Retention, and Transfer

Research has shown that there are some conditions which influence the acquisition, retention, and transfer of skills similarly, regardless of the specific type of learning involved. Conditions that influence acquisition are discussed first.

Acquisition

Acquisition refers to the learning of new skills (i.e., original learning). The generalizations described below apply whether the pupil is learning a discrimination task, a set of concepts, or any other type of learning. Ten conditions will be presented which deal with acquisition. The major source of these conditions and all those to follow is the work of Blake (1974, 1976), a trailblazer in applying the results of research in the classroom.

Intentional and incidental learning. Children learn a great deal incidentally. For instance, new words may be included in the speech vocabulary of a child without any specific awareness or any intent on his part to learn them. Likewise, when children play games (e.g., cowboys and Indians, hide and seek), they learn skills and information that will be useful to them later. It is fortunate that such learning occurs; it reduces the load that educators must bear in some degree. However, learning incidentally is not the most efficient method of learning. Children attain mastery levels more quickly when they interact with instruction and materials with the intention of learning the information or skill.

In simplest terms, the teacher should clearly explicate the information the pupil is expected to learn. Comments such as, "The next task is important; be sure to learn it well," are quite appropriate. Another way to insure intentional learning is the preparation and dissemination of objectives, but only when it is certain that the pupils become familiar with the information contained within the objectives. Therefore, the teacher should go over each objective prior to the initiation of instruction on that objective.

Expository and discovery methods. When expository methods are used during instruction, the teacher sets forth the meaning and purpose of the activity. A discourse or example designed to explain what is difficult to understand is used. In short, an effort is made to insure that the pupil grasps the material to be learned. When discovery methods are used, the pupil is told what must be learned. Therefore, the pupil learns intentionally. However, little other information is given. He is forced to determine how to learn the task and under what conditions the skill can be applied. In addition, he may have to guess where to go in order to acquire information about the task. Expository methods are superior to discovery methods when the intent is for the pupil to master the objective as quickly as possible. Discovery methods increase stress and frustration, but do not, of themselves, help the pupil learn how to deal with such stress and frustration (except incidentally). Consequently, even when teaching how to deal with the negative effects that result from stress and frustration, expository methods should be used.

Whole and parts methods. In the whole method, the task is taught as a unity. There is no attempt to split the task into components. In the parts method, the task (as a whole) is divided into components, or enabling skills, which, taken together, comprise the whole. These components are then taught separately, usually in sequence, until the whole task is mastered. A combination of these two approaches is generally better than using either one in isolation. For example, here is a description of a parts-whole-parts method: (a) First, the pupil learns to read a few nouns, verbs, and modifiers in isolation (a part); (b) Next, he learns to read these words arranged in a simple story (the whole); (c) Then, he learns more words in isolation (another part); (d) The pupil reads more brief passages including all the words learned so far (the whole), and so on. The progressive parts method, commonly known as chaining in behavior modification literature, could be used to teach a pupil to alphabetize using the first letter in a list of words, then the first and second letter, and so on.

Although combined approaches are usually superior, the teacher must make some decisions regarding the approach to use. For example, if the objective states that an extremely generalized concept be learned, it is often best to use a whole approach. This would make sense when introducing the concept of the universe to a pupil. Upon initial presentation, much of the underlying structure of the concept would be too difficult for the pupil to grasp, not to mention the teacher's inability to divide the concept into discrete parts. In addition, there is probably a point of diminishing returns with regard to breaking tasks into parts. In theory, even small parts can be divided into smaller parts. A rule of thumb is to avoid further division when the pupil has shown that he can learn efficiently at a given taxonomic level. In other words, if the pupil can learn efficiently at the broad skill level, do not break the task into enabling skills; if he can learn at the enabling skill level, do not break the enabling skills into specific skills.

Distribution of practice. Massed practice and spaced practice refer to the way in which the pupil's study for mastery is spread out across time. With massed practice, the pupil studies for relatively long periods of time in a single session. When pupils "cram" for an examination, they use massed practice. With spaced practice, the pupil studies frequently for relatively shorter periods of time.

Research on distribution of practice varies with the task and characteristics of the pupil. Motor skills are not learned as quickly when massed practice is used. On the other hand, when the task involves verbal learning, the findings are complex and may indicate no significant differences in the effects of massed versus spaced practice. With regard to the learner, students with short attention spans require that practice be spaced. They need increased variety during instructional periods. Other pupils do better with relatively longer practice sessions because frequent changes in task and orientation cause them confusion. These pupils often need more time to warm-up for a task; if highly spaced practice is used, the task may change just as they are ready for real practice. Still other pupils are better able to tolerate rather tedious, mundane tasks and can benefit from massed practice.

Amount of material. This refers to the aggregate of what is to be learned--the total number of elements for which the pupil will be held accountable. It is understood that longer tasks require more time for mastery; it is not common knowledge that, as tasks become longer, they become disproportionately harder. For instance, doubling the amount of material does not simply double the number of trials required for mastery. It more than doubles the number of trials required for mastery. The amount of material should be minimized to the extent possible. When exigencies in the classroom interfere, more time to study should be given the pupil than would have been necessary if the material were learned in smaller pieces.

Recitation. Recitation refers to practice without the benefit of instruction or materials. It is the repetition of responses in the presence of stimuli. When a pupil asks a friend to ask him a set of study questions which he attempts to answer, he is using recitation.

Recitation greatly facilitates learning. A 4:1 ratio of recitation to reading information is most effective, for instance (Blake, 1976). In addition, recitation through both oral and visual channels is superior to oral or visual recitation alone.

Oral and visual presentation. Instruction can proceed through visual media (e.g., pictures, printed matter, slides), oral media (e.g., lecture, oral recitation, records), or both (e.g., television, videotapes).

When researchers have investigated the relative effects of these approaches, they have found them to be similarly effective. Consequently, the teacher should look to the task for direction in preparing instructional strategies. Should the task lend itself readily to the visual mode (e.g., learning colors), obviously, visual materials would be emphasized. If the task lends itself to the oral mode (e.g., discriminating sounds), rely most heavily on oral presentations. When either mode seems appropriate and materials are available, use both.

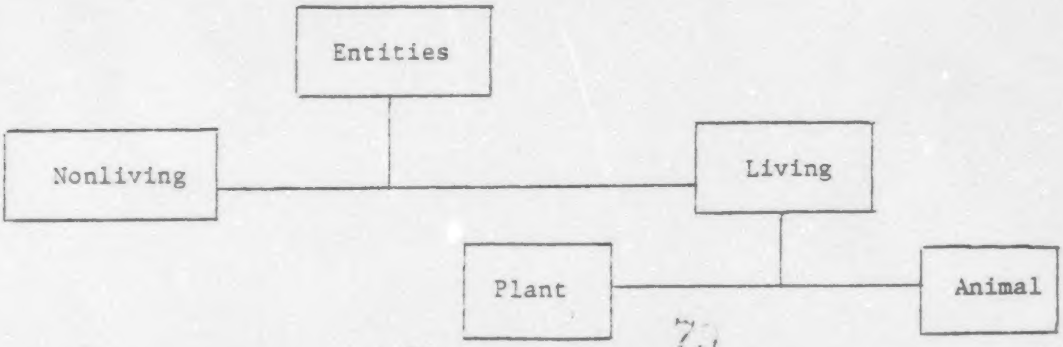
Orientation and attention. Orientation is the act of attaining a learning set. It is getting ready to respond to information and material. Attention is focusing on some stimuli in a setting and ignoring others. Within the materials to be learned, attention is winnowing the total set of stimuli and concentrating on specific stimuli.

The importance of orientation and attention to learning cannot be overemphasized. Without them, little learning can take place. When pupils are passing notes about a weekend party, they are not orienting and attending to the learning task. What can be done to ensure orientation and attention? First, allowing pupils to survey the materials they will learn facilitates orientation. The teacher can ask them leading questions that will encourage them to view particular aspects of the materials. Telling pupils how the materials will influence their own later success increases orientation. Finally, instructing pupils to "get ready to learn" the material increases orientation, as does telling them how they will be held accountable for the material. Attention can be generated through direct instruction as well: "Look at the photograph on page 14." In addition, coding techniques like underlining, presenting key material in colors, and asking lead questions which focus attention on particular elements are facilitative. These techniques naturally isolate material, which leads to more efficient learning.

Knowledge of results. When a teacher tells a pupil about the adequacy of his performance on some task, knowledge of results is used. A common synonym is feedback. In short, the teacher informs the pupil about responses that are correct and responses that are incorrect. For incorrect responses the pupil is told where he went wrong and how to correct his errors.

Feedback greatly facilitates learning; without it, little learning takes place. If the teacher presents feedback which has emotional connotations (e.g., "Great work, Fred!"). motivation as well as learning may be affected. While positive social reinforcement may enhance the feedback, aversive motivational techniques (e.g., negative reinforcement, positive punishment, response cost) may negate the beneficial effects of feedback concerning errors in the child's responses. That is, the pupil may focus on the emotional evaluation of his performance and not on the feedback which tells him how to correct his performance. Knowledge of results should be viewed as used by the teacher to influence the pupil cognitively, not emotionally. In contrast, if the teacher wishes to influence the pupil emotionally, conditions which influence motivation should be used. Whichever decision is made, it should be made intentionally by the teacher.

Structure. Structure refers to the organization and arrangement of the material to be learned. Structure includes how the elements of the material are related to one another. Below is a brief illustration of the taxonomy or structure of entities:



Other taxonomies can be easily conceptualized: city government, arithmetic skills, English grammar.

When pupils are able to understand how elements in material "fit together" they learn better. Learning the same number of disparate elements takes more time. One important aspect of structure concerns the fact that it allows the pupil to see how new material relates to previously learned material and ultimately, where the material will take him (e.g., qualification for a job, entry into college, improved ability to grasp current events).

All knowledge has structure. When teachers instruct pupils without reference to that structure, they experience less success in imparting knowledge. Partly, it is because pupils have more difficulty grasping apparently unrelated elements, but partly, it is because the teacher is also unclear about the knowledge to be taught. Therefore, it behooves the teacher to study the material to be taught and present it in a structured, organized fashion.

At the highly specific level, task analysis leads the teacher to a better understanding of the structure of the skill to be taught. Indeed, task analysis is usually stressed at the lowest taxonomic levels (e.g., putting on a shirt, tying shoes). Teachers should apply these same analytic skills at higher taxonomic levels. For instance, they should analyze domains like reading, arithmetic, and writing into broad skills, enabling skills, and specific skills in order to grasp the structure of the material they teach more thoroughly. The taxonomies of goals and objectives included in this book represent the product of such an endeavor.

Retention

Retention refers to the amount of learned material which is preserved over time. Simply, it is what is remembered. Several conditions influence the degree to which pupils retain information. Four of these conditions are presented below.

Degree of original learning. When children learn material extremely well during acquisition, they are much more likely to retain the material across time. Children who experience a low degree of original learning are much more prone to forget.

To illustrate, consider the child who has attained mastery level performance on the tenth trial of instruction and practice. Assume this to be the objective:

> Given the 26 basic Braille letters presented in random order, the pupil will orally name each sign as it occurs with 100% accuracy at a rate of 26 per minute or better.

In order to ensure retention of this objective, the teacher should present the child with five to ten additional trials of instruction and practice before moving to new and different types of objectives.

Instructions and intent. Like acquisition learning, in which pupils learn material or skills incidentally, children also retain information incidentally. However, if instructions are used which direct the pupil to the specific information that must be retained (i.e., retention with intent), the pupil will remember that material more readily. Briefly, incidental retention is inferior to instructing the pupil concerning the material to be retained. In the latter approach, the pupil intentionally focuses on key material and knows which material may be deemphasized. When instructing for retention with intent, the teacher makes such comments as: "Remember what I'm going to say next!" or "Note the raised line drawing on your desk--it's on your objectives list for this unit."

Reminiscence. This is a phenomenon that occurs following rest after massed practice. Here is what happens: (a) The pupil is given a long practice session on a skill with little or no rest; (b) gradually during the practice his performance deteriorates as a result of fatigue, hunger, boredom, etc., thus masking (or hiding) what the pupil has learned and retained; (c) the pupil is given a rest period which allows the intervening factors (i.e., fatigue, boredom, etc.) to dissipate; (d) the pupil is given an evaluation test which reveals his true retention. If the pupil had been evaluated for retention immediately following the end of the practice session, the results would have indicated little retention. These results would be invalid. That is because the intervening factors would have prevented the child from performing at his best level.

When teachers evaluate pupils to determine how much they have retained, they should be sure the pupils are well rested. Under these circumstances, actual retention of the material will be revealed.

Type of retention measure. There are three basic measures of retention. They are: (a) Recognition, in which the pupil selects a correct response on a test from a set of plausible alternatives; (b) structured recall, in which the pupil produces or supplies responses on a test (e.g., short answer and essay items); (c) relearning or savings, in which the pupil studies previously learned material again and the time or effort required to reattain mastery level is measured.

Different results are obtained when these measures are applied to the same objectives. Recognition is easiest, relearning is harder, and structured recall is hardest. This generalization is mitigated somewhat by other factors (e.g., number of alternatives in recognition items), but is valid when such factors are controlled.

Unfortunately, teachers usually choose particular retention measures for the wrong reasons. Some teachers feel more comfortable constructing tests with essay items which require structured recall. Such measures are relatively easy to construct, but difficult to score reliably. Other teachers prefer multiple choice tests, because they are easily scored, though difficult to construct. Such a teacher may not trust his ability to make reliable, valid judgments on an essay test. Relearning has seldom been used outside the experimental laboratory. Teachers seldom use it because they are unfamiliar with its application.

The best basis to use when choosing how retention will be measured is the objective which is to be evaluated. Consider the objectives which follow:

Objective 1: Given three brands of food products (e.g., canned soup lunch meat, fruit) with varying prices, the pupil will choose the brand with the lowest price with 95% accuracy.

Objective 2: Given a page of problems containing the 100 basic multiplication facts presented in random order, the pupil will write answers to each problem with 100% accuracy at a rate of 25 per minute.

Objective 3: Given tax forms by the Internal Revenue Service each year, the pupil will complete such forms accurately and mail the results to the Internal Revenue Service.

Objective 1 requires selection if prices are presented in a uniform format. That is, if soup A is 20¢ for an eight ounce can, and soup C is 19¢ for an eight ounce can, then the pupil's task is simple selection. For such an objective, the use of a test which required structured recall or relearning would be both unnecessary and inappropriate.

Objective 2 requires structured recall. If the pupil was instructed to "pick the right answer" from a group of four alternatives on the test, the pupil's score on the test could not be used to evaluate his mastery of the objective. That is because the objective specifically requires him to supply (by writing) the answer.

Objective 3 should be evaluated by measuring relearning. This measure would provide the best estimate of a skill previously learned. If part of the material learned previously is retained, it should be evident in the savings accrued in the time required for completion of the task. In general, relearning measures long term retention.

An important aspect of choosing the type of retention measure really concerns the writing of objectives and, more broadly, the development of taxonomies of goals and objectives. It is at this stage of teaching that measurement decisions are made regarding retention; later, it is simply a matter of interpreting what the objective describes. Here is the important aspect: Objectives should be written so that the retention measure to be used is the same one required in the environment outside of school. For instance, when an individual attempts to recall the facts and details contained in the President's State of the Union Address, he does not have the luxury of selecting from among four or five possible alternatives. He must apply structured recall to produce those facts and details. Consequently, testing this skill via multiple choice tests is invalid. In some cases, the real world environment outside of school requires the individual to "pick the right answer." Of course, selection is the retention measure to use in such cases. Here are some examples: (a) choosing socks that match; (b) pick clothes that fit; (c) discriminating denominations when paying for purchases in a store.

Transfer

Transfer is the degree to which a pupil applies material or skill learned in one situation to situations which differ from the original learning situation. Positive transfer occurs when the pupil's performance in the new situation is aided by what he learned in the original situation. Negative transfer occurs when the pupil's performance is inhibited by what he learned in the original situation. Teachers want to facilitate positive transfer and inhibit negative transfer. Three conditions which accomplish this goal are presented below.

Instructions and intent. As is true for acquisition learning and retention, pupils transfer better when they are told that they will have to transfer specific information and skills. It is important for them also to know what new situations will require the use of the information and skills.

This condition is easily confused with another condition which influences transfer: similarity relations. This latter condition will be discussed later. Instructions and intent is distinctive in that it focuses on informing the pupil that he will have to use the skill in the future. This knowledge secures the pupil's awareness and attention.

Degree of original learning. Children who master material at overlearning levels not only retain better; they are also better able to transfer the material than pupils who do not acquire the skill so completely. When overlearning is high (e.g., practice continues 100% beyond initial mastery), positive transfer is greatly facilitated. When conditions exist which are favorable for negative transfer, a high degree of overlearning allows pupils to deal with those conditions more effectively, thereby reducing negative transfer. Consequently, teachers should give students instruction and practice which allow them to attain high levels of overlearning.

Similarity relations. Similarity relations refer to two ways in which situations can differ when the pupil must transfer from the original learning situation to the transfer situation. Each difference will be discussed separately.

First, the *stimuli in the two situations differ but the responses remain the same*. For instance, road signs in many parts of the United States have recently changed. International signs are now used which allow non-readers and foreigners to readily understand their meaning. Individuals who originally learned under the old system must transfer the very same responses to new and different stimuli. When such circumstances exist, the teacher must point out to the pupil how the stimuli vary from the original stimuli as well as how the stimuli remain the same (e.g., they are still signs found along roads which provide information to the traveler). In addition, the teacher must inform the pupil that the response remains the same even though the stimuli differ in many ways.

Second, the *stimuli in the two situations remain the same, but the responses differ*. For instance, speaking quietly in a library is important when it is open and others are trying to concentrate, but it is not important after hours when others are gone. Using relatively heavy pressure is appropriate for stopping a car with standard brakes, but inappropriate for the same car which is equipped with power brakes. Although the ordinary water snake and the water moccasin are nearly identical in appearance, only the bite of the latter need be feared because it is poisonous. When such circumstances exist, the teacher must point out to the pupil how the responses vary even though the stimuli remain essentially the same.

In both cases above, the teacher's job is to instruct the pupil specifically about how he should deal with varying stimuli and responses. The pupil should be made aware of the possibility of positive and negative transfer. He should be taught how to avoid the effects of negative transfer and facilitate the effects of positive transfer for specific, common environmental situations.

Specific conditions which influence specific types of learning. It would be inappropriate to end this part of the chapter without discussing conditions whose effect is specific to particular types of learning. Blake (1974) described 34 conditions which variously apply to discrimination learning, concept learning, verbal learning, motor learning, dealing with connected discourse, and problem solving. Some conditions are more powerful in their effect than others, but all have support for their use derived from basic research conducted by educational psychologists, experts in child development, psychologists, and special educators. Following is a list of each learning type and the conditions which influence it. The reader will be amply reinforced for learning and applying them in his or her classroom. Unfortunately, their presentation is beyond the scope of this volume.

Motivational Conditions Which Influence Performance

Terms

It is with some reluctance that this part of the chapter was given a title which is at variance with the terms currently used in the field of special education. In fact, *motivational conditions which influence performance* is simply a descriptive phrase that is synonymous with *conditioning* or what is commonly called behavior modification in today's parlance.

There are several reasons behind this decision. First, the title indicates the relationship it has with the first part of the chapter (i.e., conditions which influence learning). Second, the title implies that there are useful distinctions to be made among the terms used to separate the parts of the chapter (i.e., learning, motivation, and performance). Third, the terms used in this section are not new terms. Motivation and performance are concepts which have a long and rich history in the study of human behavior. In special education, we have given them too little attention.

Definition of Motivation

A motive is an idea, object, or event that causes a person to act in a particular way. Motivation is the state of being moved to act by the motive. For instance, one has the motivation to eat, sleep, learn, achieve, etc. In naturally occurring situations, we seldom know the specific motive which causes a person to act in a particular way. But in the classroom we consciously provide children with motives which cause them to act in ways we deem desirable. Usually, teachers are strongly influenced by societal values when they choose the acts they motivate pupils to perform. Occasionally, school officials codify such values by adopting a specific curriculum or set of social standards to which pupils' behavior is compared. This part of the chapter deals with conditions which influence the motivation and thus, the performance of children. First, some clarifying comments are needed.

Need for Motivation When Learning

A reasonable synonym for motivation is desire. Consider the pupil who has no desire to learn objectives which are relevant to school. He is likely to be lethargic when presented with instructional materials. Further, he may be easily distracted and he may misbehave frequently. Under such circumstances the conditions presented in the first part of this chapter are rendered quite ineffective. The conditions which influence learning are based on the assumption that the child is motivated to learn the material or skill. Without such motivation, he will learn only incidentally, which we know to be an ineffective condition for learning. In short, high motivation maximizes the effects of the conditions of learning, but is not, by itself, sufficient to ensure a high degree of learning. Even the most motivated youngster will not learn much if the teacher has failed to apply the conditions which influence learning appropriately. Conversely, the extensive and appropriate use of the conditions of learning is not, by itself, sufficient to ensure a high degree of learning either. It is the effective _pairing_ of the conditions which influence learning with the motivational conditions which influence performance that ensures a high degree of learning.

The Distinction Between Learning and Performance

In practice, when educators want to estimate learning, they usually measure the child's performance on a test after a period of instruction, assume his motivation during testing to be "normal" (whatever that may mean), and infer learning on the basis of his performance on the test. Such a practice is fraught with threats to its validity. Only the assumption of "normal" motivation will be discussed here inasmuch as it has been largely ignored by other authors. In addition, the distinction between learning and performance hinges on this assumption to a great extent.

Nearly all tests which might be used to estimate learning assume that the child is motivated to "do his best" on the test. If the assumption is true, then the child's ultimate score can more easily be ascribed to his learning. If not, the score may be a function of learning or motivation or a combination of the two (not to mention other possibilities which have

have been widely discussed, such as test error and test invalidity). Consider three children, all of whom have learned the same amount. One child exhibits a level of motivation to perform on the test which is about the same as most other children for whom the test was designed. Another child has a very strong motive for performing well on the test: Perhaps it is to rank first in his class or perhaps a highly valued scholarship will result from a high score. A third child has a low level of motivation to perform well on the test: Perhaps the test administration will prevent him from taking a trip with his parents or perhaps it will interfere with his work on the school newspaper. As a result of their differences in motivation, it is very likely that the three youngsters will obtain scores on the test which are quite different even though all three have actually learned the same amount.

How much impact does variance in motivation have on estimates of learning? This is an important, albeit rhetorical, question since it has not been studied very much. Indeed, it is startling to realize how little attention has been paid this crucial variable by researchers. Though the field abounds with measures of intellect and all sorts of achievement, there exist no generally accepted instruments which assess motivation. In addition, few test manuals contain more than a paragraph or two concerning the motivation of the examinee. At best, vague references are made regarding effective rapport building and "reaching" the child. Yet, it is quite logical to assume variations in motivation can lead to estimates of "learning" which vary well beyond standards for practical significance. It is important to point out that these latter variances are solely the result of motivational differences and have nothing to do with learning.

As should be clear, learning is difficult, if not impossible, to measure directly. In addition to more reliable and valid instruments, we need worthy estimates of the child's level of motivation during important performances. In the meantime, it is most important to recognize that a child's behavior on a test (or at any other time) is simply a measure of performance during that period of time. Many factors contribute to this performance other than learning (not the least of which is motivation).

A Comment About Learning Ability, Motivation to Perform, and Treatment Approaches

The chief importance of analyzing performance concerns our interest in constructing effective treatment approaches for pupils placed in special education. In recent history, special education has not been noted for its excellence in accomplishing this goal. In fact, Dunn (1968) considered many special education practices unjustifiable. This section will attempt to cast assessment practices into a model which leads directly to the construction of effective treatment approaches.

Consider performance deficits. It was suggested in the previous section, and it is hypothesized here, that there are two primary personological variables which account for performance deficits: low learning ability and low motivation to perform. In a haphazard way, research has identified two treatment approaches which address themselves to these causes of performance deficits: conditions which influence learning and conditions which influence the motivation to perform. The former conditions were presented in the first part of this chapter. The latter conditions will be presented after this section.

The two sets of conditions have distinctive features. The main distinctive feature of all conditions which influence learning is that they make the acquisition of new information or skills easier. They do so by clarifying the material for the pupil, by introducing the structure of the material in an understandable manner, by providing useful feedback on correct and incorrect responses, and so on. Notice that changes in motivational levels come only as a side product of these conditions, but not as a central purpose. The main distinctive feature of motivational conditions is that all such conditions are aimed at increasing the extent to which the pupil wants or desires to perform the tasks at hand. They do so by promising and then delivering a valuable pay-off to the pupil for successful performance. In this case, notice that changes in learning levels come only as a side product of the conditions, but not as the central purpose.

If the relationships discussed above are true, then recommendations for the practice of special education are easily determined. We must spend far more time discriminating the reasons for the performance deficits of individual children than we have in the past. For the child who exhibits low learning ability (perhaps the classically emotionally disturbed child), the primary treatment approach should focus on the conditions which influence the motivation to perform.

Some readers might argue that, since both sets of conditions, properly used, lead to improved performance, both sets of conditions should be used regardless of the causes of the performance deficit. In an ideal situation, the argument certainly is unassailable. However, the following truths must force us to search for the treatments which are most beneficial to our clientele while deemphasizing others:

1. Teacher/pupil ratios obviate the constraint that not all propitious treatments may be implemented with every child.
2. Facilities and equipment necessary for preparing all possible treatments is not available in most special education settings.

3. Teacher training programs are forced to matriculate trainees much too rapidly to expect them to impart all possible treatments to all trainees.

Other counter arguments could be added. However, since the recommendations in this section are based on variables which hypothetically account for performance variance among children, what is most obviously needed to resolve argument is research designed to test the hypothesis. Then, if such differences among children are verified, research must be done to determine whether treatments discussed in this chapter align themselves with the learning/motivation dichotomy in terms of instructional outcomes. Given positive results, the field of special education can begin to associate diagnosis and treatment with assurance that positive results will accrue.

Increasing the Strength of Existing Behavior

The title of this section, which uses traditional conditioning terminology, highlights the fact that motivational conditions apply most effectively to previously learned behavior. The title implies that the purpose is to give the pupil reasons for wanting to perform particular types of behavior more frequently, with more intensity, for longer periods, etc. The informed reader will note two differences between usual texts on conditioning and the pages which follow. First, conditions like shaping, chaining, prompting, and modeling have been omitted. These conditions are more properly classified among the conditions which influence learning. For instance, shaping and chaining are variations of the whole and parts methods. They are motivational only insofar as the completion of any task is reinforcing. Their key elements concern the fact that the skills or information are learned more readily by the pupil. The second difference is that conditions ordinarily discussed only briefly insofar as they apply to positive reinforcement or negative reinforcement are dealt with here more extensively. Because these conditions are usually discussed briefly, practitioners often fail to apply them correctly.

Positive reinforcement. An increase in the strength of a behavior which results from the presentation of a positive reinforcer is known as *positive reinforcement*. A *positive reinforcer* is any object, event, or idea which strengthens the behavior it follows. Examples of positive reinforcers commonly cited in the literature are types of food, drink, praise, and competition. Food and drink are considered *primary reinforcers* because an organism's need for them is innate or at least learned very early in life. Praise and competition are considered as examples of *secondary reinforcers* because they are clearly not inborn, but learned later in life.

Positive reinforcement and negative reinforcement (to be discussed next) are the two cornerstone procedures on which any motivational strategy depends if a behavior is to be strengthened. Assuming for the moment that all other conditions have been taken into account properly, the teacher simply waits for the occurrence of the behavior to be strengthened and, when the behavior is observed, presents the pupil with the reinforcer. Because the pupil desires to receive the reinforcer (e.g., smile, nickel, extra recess), the behavior which caused the reinforcer to be presented is strengthened. It is this relationship between behavior and reinforcement that causes many Americans to go to work each day. Work is produced in order to gain a pay-off (or reinforcer). For many the reinforcer is money, which can be used to gain other reinforcers (e.g., food, shelter, clothing, entertainment). The relationship operates in the same way in the classroom. Behavior which the pupil is capable of performing is likely to occur only to the extent that the pupil is motivated to perform it. Reinforcers provide such motivation.

Negative reinforcement. An increase in the strength of a behavior which results from the cessation of a negative reinforcer is known as negative reinforcement. A negative reinforcer is any object, event, or idea which, when removed as a consequence of a behavior, strengthens that behavior. A negative reinforcer is an aversive stimulus which the pupil desires to have removed from his environment. His motivation for performing the behavior to be strengthened is to cause the aversive stimulus to be removed. Perhaps the classic example of a practical use of negative reinforcement is that of the mother who nags her daughter to clean up her room. The nagging continues more or less continuously until the daughter cleans her room. Then, the nagging stops. If room cleaning has been negatively reinforced, the daughter is more likely to keep her room clean in the future. Here are three more examples of negative reinforcers and the behavior they reinforce: (a) hunger reinforces eating; (b) fatigue reinforces sleep; (c) an alarm clock ringing reinforces awakening.

The teacher's role in using negative reinforcement successfully is to ensure that the presentation of the negative reinforcer is consistent and cannot be escaped or avoided except by performing the desired behavior. This may be difficult, in as much as students may fail to attend classes, run away, or become aggressive when negative reinforcement is used too much of the time in class. A good rule of thumb which will overcome these negative side effects, is to use negative reinforcement as an auxiliary condition, but never as a central theme of the classroom operation. If positive reinforcers are used 90% of the time, students seldom come to view the classroom or teacher as generalized aversive stimuli.

Type of reinforcer. There are two types of reinforcers: primary reinforcers and secondary reinforcers. Primary reinforcers influence behavior at birth; they need not be learned by the organism. Secondary reinforcers, which are learned, gain their reinforcing value from primary reinforcers. When a neutral stimulus is repeatedly paired with a primary reinforcer, the neutral stimulus acquires reinforcing value which it did not have prior to the pairing. Therefore, mothers, who initially are neutral stimuli to their babies, take on secondary reinforcing value when their presence is repeatedly paired with feeding, a primary reinforcer for the infant.

Not all secondary reinforcers must be paired with primary reinforcers in order to gain reinforcing value. Neutral stimuli may become secondary reinforcers when they are paired with powerful secondary reinforcers as well. Therefore, money (a secondary reinforcer) may be used to buy a ticket (another secondary reinforcer) to attend a movie (a third secondary reinforcer). By the time he reaches adulthood, it is virtually impossible to hypothesize the chain of pairings which have led to the development of a long list of secondary reinforcers for any given individual.

Specific reinforcer used. There are many generalized reinforcers in the environment. These are reinforcers that have similar positive value for most human beings. For example, money, a smile, a pat on the back, and a high school diploma are considered as generalized reinforcers. However, it is problematical to assume that individuals value any particular generalized reinforcer equally. It is not only false that generalized reinforcers are equally valued, it is also false that they are valued at all by some individuals. Some children, whose reinforcement histories are quite different from most youngsters, may cringe in horror if their teachers attempted to hug them. For such children, a smile and a pat on the back may have the same effect as a paddling or a slap in the face.

Too often, teachers choose specific reinforcers on the basis of their own preferences, assuming that what is "good" for them is "good" for children. It is equally inappropriate for teachers to select a specific reinforcer because "most third-graders are reinforced by it." Instead, reinforcers should be selected as an actuarial process: Observe the child during periods of freedom to determine what objects, events, and activities he is attracted to. By all means, closely monitor the effectiveness of selected reinforcers and use only those that are maximally effective. Finally, pair neutral stimuli with existing primary and secondary reinforcers in order to establish new reinforcers which can be used to motivate the child.

Delay of reinforcement. The longer reinforcement is delayed following a desirable behavior, the less effect the reinforcer will have on the behavior it follows. Consequently, good teachers attempt to reinforce children *immediately* following a behavior they wish to increase in strength or frequency. How quickly does the effectiveness of a reinforcer decrease if its delivery to the pupil is delayed? No one knows precisely, but it is usually accepted that "seconds count" when reinforcing children. It is likely that the effect may be even more dramatic when handicapped children are involved. That is why some special educators wear aprons or pouches containing easily accessible reinforcers. With such containers, they have a ready supply of reinforcers which can be presented to the pupil almost before the response is demonstrated.

Amount of reinforcement. When determining the amount of reinforcement to use, the teacher can only make one correct choice; however, (s)he can make two serious mistakes. Ideally, teachers dispense just the right amount of reinforcement to maximize motivation. However, it is easy to err by offering too much reinforcement. Besides being inefficient in time, this costs money and effort by the teacher. Presumably, it could also be detrimental to the pupil because he might learn to expect too much from his environment. Such children will find the natural world outside the classroom a harsh environment after experiencing such a reinforcement history in the classroom.

The second mistake is to present too little reinforcement following the desirable behavior. This is probably more common than the first mistake and leads to no observable improvement in motivation or performance. It seems important to point out that when too little reinforcement is dispensed, it does not mean that the specific reinforcer (e.g., praise, candy) is wrong. Rather, it means that not enough of the reinforcer is offered in order to have a positive result. It means that, if more vigorous praise were used, for instance, or if two M&M's were given instead of one, the level of the behavior measured would significantly increase.

Novelty of the reinforcer. Novel reinforcers have not often been experienced by the child before. Since they are new, children are frequently motivated to perform in order to obtain them. Some novel reinforcers are a new toy, an unusual snack, or a "surprise" activity. Teachers can use novelty as a means to motivate children; however, novelty dissipates, often rather quickly. Therefore, most novel reinforcers should be used infrequently in order to maintain interest and variety in the curriculum. One cannot legitimately expect them to carry the weight of a motivational program indefinitely.

Schedule of reinforcement. Reinforcement schedules vary in two ways: (a) the ratio of behavior to reinforcement may change; (b) the time between instances of reinforcement may change. In addition, both ratio and time, or interval, schedules may be either fixed or variable. There are four basic schedules of reinforcement: fixed ratio, variable ratio, fixed interval, and variable interval. Each is discussed separately below.

The simplest type of fixed ratio schedule is the fixed ratio: 1 schedule. It is also known as the continuous schedule of reinforcement. The term, fixed ratio: 1, means that the pupil is reinforced for every identified desired behavior he emits. The ratio (i.e., one reinforcement for every occurrence of the desired behavior) is fixed because it doesn't change from instance to instance. The numeral in the term indicates how many occurrences of the behavior must take place before reinforcement will be given. Therefore, a fixed ratio: 7 schedule means that reinforcement will recur after every seventh occurrence of the desired behavior. A way to abbreviate fixed ratio schedules is to use only the first letter in each word, a colon, and the appropriate numeral (e.g., FR:3, FR:8, FR:23).

It is important to know about different schedules of reinforcement because they have characteristic effects on the behavior of organisms. These characteristics and others to be discussed present the teacher with particular advantages and disadvantages. For example, consider the figures below. Figure 1 illustrates the improvement in performance that commonly occurs when an FR:1 schedule is used. In particular, note how steep the slope of improvement is. Also, notice that at no point does the slope become horizontal; this would indicate that the organism was resting (i.e., that no instances of the desired behavior were occurring). Now, inspect Figure 2 which approximates the improvement in performance that commonly occurs when other fixed ratio schedules are used (e.g., FR:6, FR:11). Although the slope of improvement remains steep, it is not as steep as the FR:1 schedule, indicating slower improvement. And note how the organism commonly rests or takes a break from producing the desired behavior immediately following reinforcement (N.B.: reinforcement is indicated by the short diagonal lines extending from the slope).

The advantages of the FR:1 schedule are obvious. It leads to rapidly improved performance with few, if any, nonproductive periods. There are two main disadvantages in using the FR:1 schedule. First, reinforcing every occurrance of the desired behavior is extremely time consuming for the teacher.

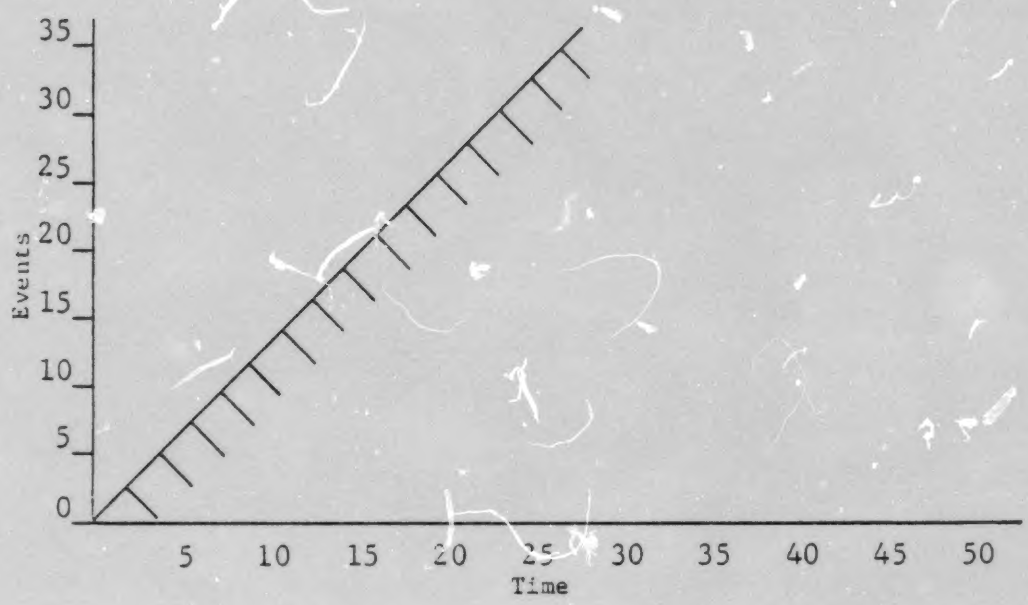


Fig. 1. Cumulative record of a typical continuous reinforcement schedule.

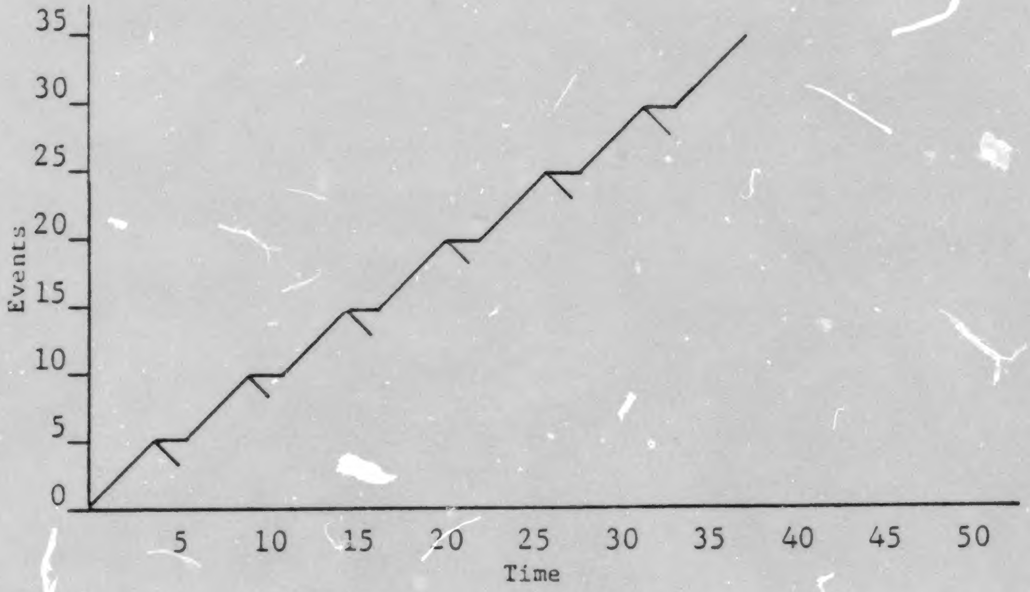


Fig. 2. Cumulative record of a typical fixed ratio schedule of reinforcement.

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Clearly, teachers cannot be expected to continuously reinforce every desirable act emitted by every child in the classroom. Second, continuous reinforcement rarely occurs in nature. Certainly, it does not occur for common acts performed in the classroom. Consequently, we do the child no favor by encouraging him to anticipate continuous reinforcement in the real world by giving it to him in the classroom.

The extremely attractive advantages of the FR:1 schedule when contrasted with its decidedly unattractive disadvantages leaves many teachers on the horns of a dilemma. The solution is to use the inefficient but highly effective FR:1 schedule during the initial stages of intervention in order to generate a more robust behavioral level. A rule of thumb (more intuitive than grounded in science) is to employ the FR:1 schedule until the behavioral level is approximately one-half of the ultimate criterion specified in the instructional objective. This insures that the behavior will not decrease when an intermittent schedule (as contrasted with a continuous schedule) replaces it.

With which intermittent schedule should the continuous schedule be replaced? Although other fixed ratio schedules (e.g., FR:8, FR:16) lead to high response rates, it will be recalled that they also generate pauses after reinforcement when the ratio requirements are high. For this reason, it is recommended that teachers not use intermittent fixed ratio schedules in interventions. The following discussion will answer the question posed at the beginning of this paragraph.

In using a variable ratio schedule, the teacher continues to reinforce after a predetermined number of occurrences of the desired behavior. However, the number in the abbreviation (e.g., FR 5) indicates the average number of occurrences of the behavior that must take place prior to reinforcement. For any given instance of reinforcement, the actual number of occurrences of the behavior may be above or below the number specified in the abbreviation. Here is an illustration of the implementation of a FR:10 schedule.

1. Develop a list of numerals which have an average of 10. For instance: 13, 6, 17, 8, 10, 13, 9, 5, 17, 12, 2, 1, 19, 8, 3, 15, 11, 1, 20, and 10.
2. At some logical starting point, say the beginning of a lesson, begin counting the number of occurrences of the desired behavior (e.g., completion of an addition fact). Immediately following his completion of the 13th fact, reinforce the child.
3. Begin counting the number of occurrences of the desired behavior again. When the child has completed the sixth addition fact following the last reinforcement, provide him with another reinforcer.
4. Repeat step three, moving to the next numeral in the list until all of the numerals are used. At this point, the average ratio of behavior to reinforcers is 10:1. This comprises a complete set of trials using a FR:10 schedule. Its use can be extended to any number of trials simply by increasing the length of the list. The only stipulation is that the numerals must average ten.

Figure 3 shows the improvement in performance that commonly results when a variable ratio schedule is used. Note that the slope is steep, indicating relatively high response rates and rapid improvement. Also, note the lack of pauses following reinforcement. Because the organism cannot know in advance when the next reinforcer will be offered (as it can when a fixed ratio schedule is used), it is encouraged to maintain a steady, consistent rate of behavior. The advantage for the teacher is that reinforcement need not occur after each desired response. However, the teacher must count the number of the desired responses emitted and the improvement in performance is not as steep as seen in the FR:1 schedule. These are clearly disadvantages of the variable ratio schedule. Nevertheless, it is more efficient than the FR:1 and maintains a high degree of effectiveness. For these reasons, it is recommended that teachers shift to a reasonable variable ratio schedule when applying the rule of thumb for FR:1 schedules. How long should the variable ratio schedule be maintained? An intuitive rule of thumb is to continue applying the variable ratio schedule until initial mastery of the instructional objective is attained. That is, if the criterion in the objective indicates 95% accuracy as the mastery level, the variable ratio schedule should be maintained until this point.

The next schedule of reinforcement has no practicable use in the classroom. However, since it is sometimes unadvisedly used by teachers it will be discussed here. In using the fixed interval schedule, the teacher reinforces the first occurrence of the desired behavior that takes place following a specified time interval. For instance, if the schedule were on FI:3 (minutes), the teacher would wait until three minutes had passed since the last reinforcement. Then (s)he would wait until the desired behavior occurred. Immediately following its occurrence, the teacher would present the reinforcer. Next, (s)he would wait three more minutes. When three minutes had passed, (s)he would reinforce the next occurrence of the desired behavior, and so on.

Figure 4 illustrates the improvement in performance that commonly occurs when a fixed interval schedule is used. Note the low slope, indicating a slow rate of improvement. Also, note the pauses that occur immediately following reinforcement (shown as scallop-like lines). This occurs because the organism can determine when the next reinforcement can occur.

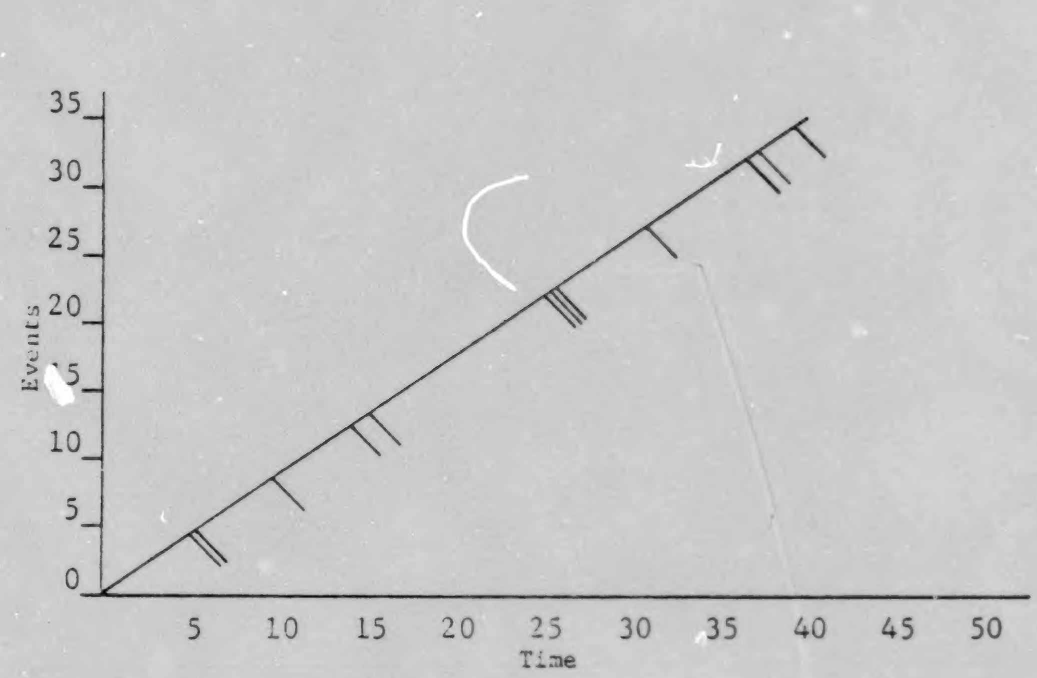

Fig. 3. Cumulative record of a typical variable ratio schedule of reinforcement.

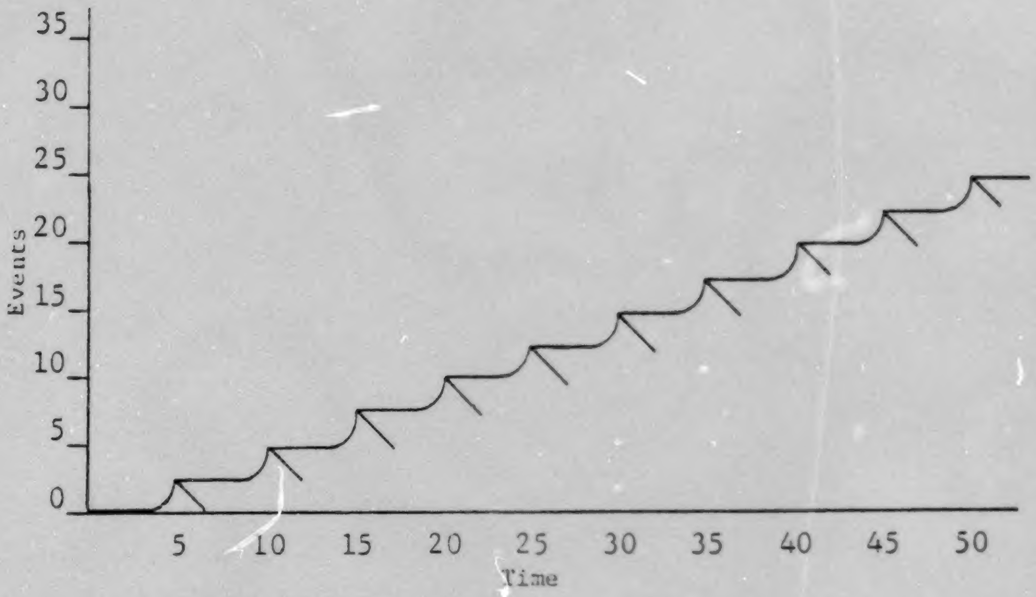

Fig. 4. Cumulative record of a typical fixed interval schedule of reinforcement.

The pupil learns that he will not be reinforced regardless of his productivity until the fixed amount of time has passed. Consequently, we see a gradual increase in the desired behavior just before the time limit is passed. Obviously, the disadvantage is that this schedule results in long, unproductive periods of inactivity. Taken together with its low rate of improvement, the schedule should not be purposefully used in the classroom.

When initial mastery of an objective has been attained, it is recommended that the last schedule of reinforcement be applied. The variable interval schedule, though it is difficult for teachers to grasp, has several advantages to promote its use. First, a description of its use is in order. Like the fixed interval schedule, when the teacher uses a variable interval schedule, (s)he reinforces the first occurrence of the desired behavior that takes place following a specified time interval. The difference is that the time interval varies from trial to trial. The average interval across a series of trials is equal to the numeral specified in the abbreviation used to identify the schedule. Here is an illustration of the implementation of a VI:15 schedule:

1. Develop a list of numerals which have an average of 15. For instance: 19, 6, 29, 3, 25, 18, 20, 31, 22, 14, 19, 7, 11, 9, 8, 17, 15, 12, 13, and 2.
2. At some logical starting point such as the beginning of a lesson, begin measuring a 19 minute interval. When the interval has passed, observe the child. Immediately following the first occurrence of the desired behavior (e.g., makes an appropriate contribution in a class discussion), reinforce the child.

3. Immediately following reinforcement, begin measuring a 6 minute interval (the second interval in the list). When 6 minutes have passed, observe the child. Reinforce the first occurrence of the desired behavior following the 6 minute interval.

4. Repeat step three, moving to the next intervals in the list until all of the intervals have been used. At this point the average interval measured will be 15 minutes. This comprises a complete set of trials using a VI:15 schedule. Its use can be extended to any number of trials simply by increasing the number of intervals in the list. The only stipulation is that the intervals must average 15.

The main error teachers make when applying a variable interval schedule is to reinforce at the end of the time interval without waiting for the occurrence of the desired behavior. Obviously, this amounts to noncontingent reinforcement and often leads to superstitious behavior in the pupil. He may repeat whatever behavior he performed just prior to reinforcement. Although that behavior may increase in strength, it is almost certain that the desired behavior will remain unaffected.

Although it is difficult to conceptualize, the variable interval schedule is among the easiest to implement. Figure 5 illustrates the improvement in performance that commonly occurs when a variable interval schedule is used. Although the slope is characteristically low, again indicating a slow rate of improvement, it is not a disadvantage because the criterion level of behavior has already been reached before the variable interval schedule is implemented. Therefore, improved performance is unnecessary. Notice that unproductive pauses do not occur and that the rate of behavior is stable. In addition, variable interval schedules are highly resistant to extinction and closely approximate contingencies found in the natural environment. Teachers who use variable interval schedules find that such schedules are similar to "doing what comes naturally." This is also advantageous for the child. When the skill has been learned to overlearning levels, his expectancies for reinforcement are very much aligned with what he can genuinely expect from the real world outside the classroom.

Figure 6 comprises a model for using schedules of reinforcement in an instructional strategy. In effect, it summarizes the foregoing discussion. Briefly, a continuous, or FR:1, schedule is used until about 50% of the mastery level is attained. Then a variable ratio schedule is implemented until initial mastery is reached. Finally, a variable interval schedule is used during the phase intended to insure overlearning. Since these rules

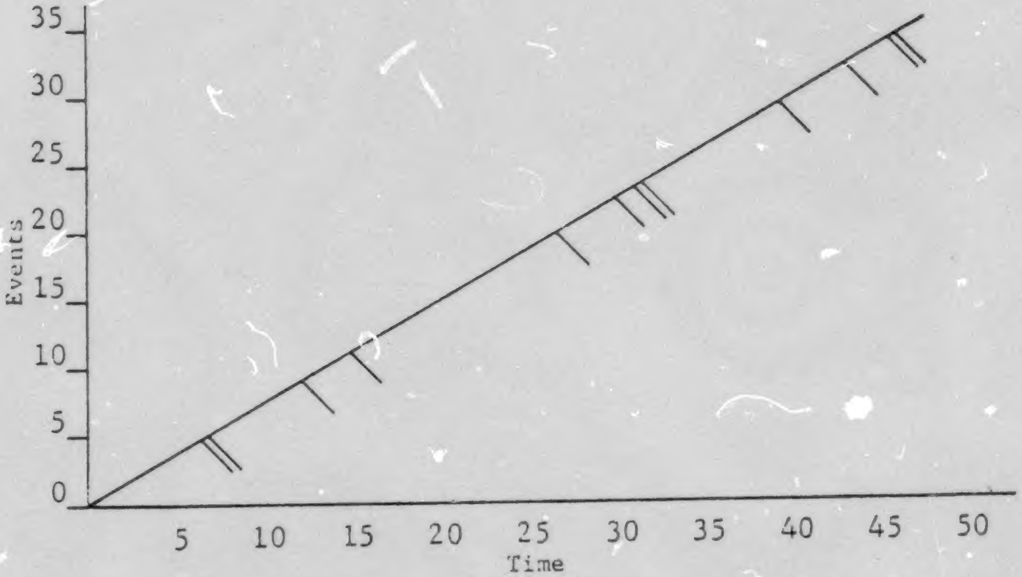

Fig. 5. Cumulative record of a typical variable interval schedule of reinforcement.

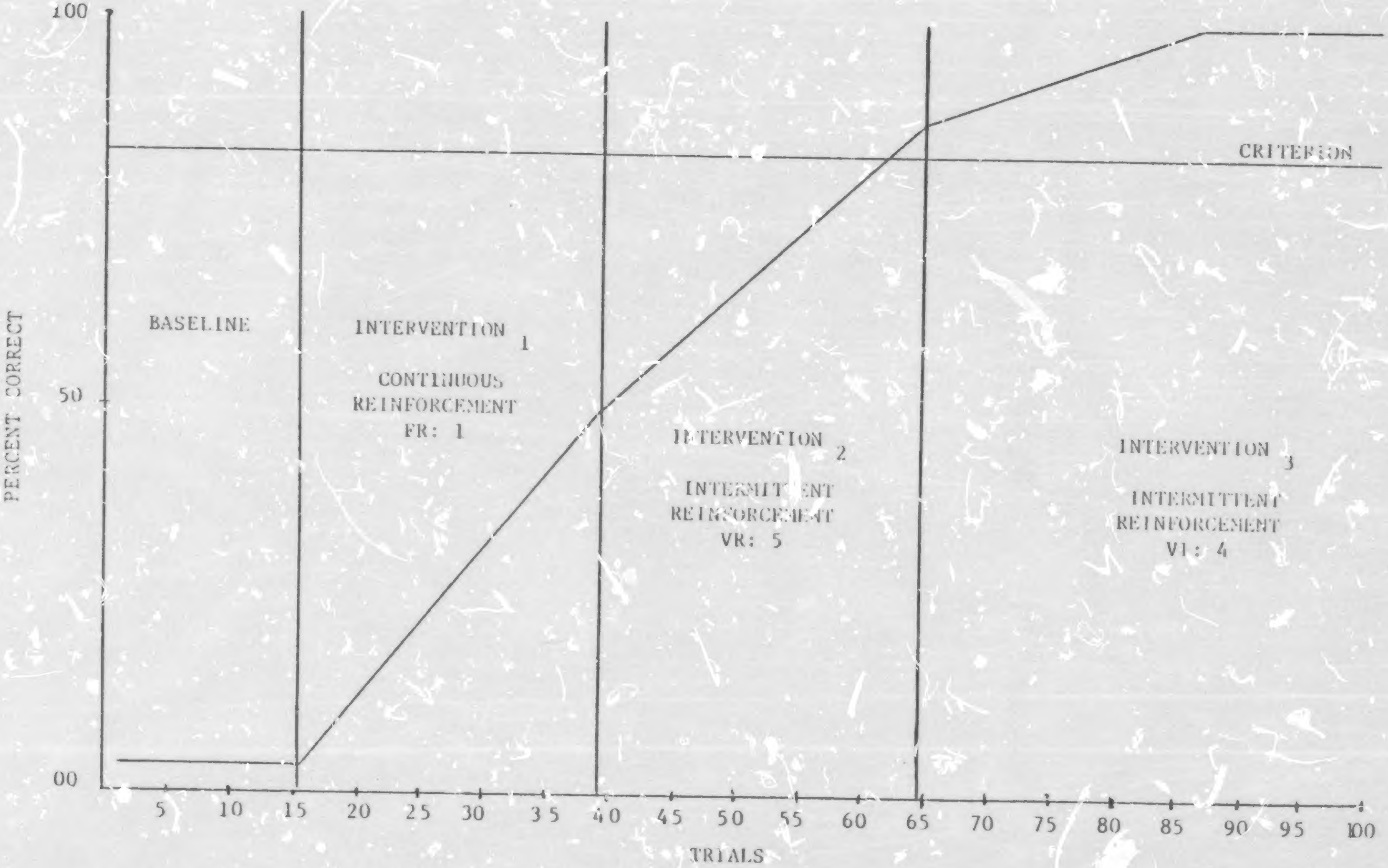

Fig. 6. A model for the use of schedules of reinforcement.

of thumb are not based on empirical evidence, the teacher may wish to experiment with other rules. For instance, positive results may accrue even when continuous reinforcement is stopped at 25% of mastery. Then, (s)he can move on to a more efficient variable ratio schedule. However, she should remember that variable ratio schedules are less effective than the FR:1 schedule and the rate of improvement can be expected to be slower.

Deprivation and satiation. Deprivation is a reduction in the availability of reinforcement which leads to an increase in the effectiveness of the reinforcement. Satiation is the opposite. That is, satiation is an overabundance of reinforcement which leads to a decrease in the effectiveness of the reinforcement. Deprivation is the state in which a hungry, thirsty, or poor person finds himself. That individual may perform tasks willingly that he would ordinarily eschew in order to obtain the food, water, or money of which he has been deprived. Sometimes people "get too much of a good thing." The over-eater and over-drinker may become physically ill in such a state of satiation, while the wealthy individual may lose interest in accumulating more money. When teachers are interested in increasing the strength of a behavior, it is important that the pupil not reach a state of satiation with regard to the reinforcer. If satiation is attained, further attempts to strengthen the behavior will fail, at least until a state of deprivation is reinstituted. The rule of thumb for the teacher is to use a variety of reinforcers when motivating children. In consequence, pupils maintain a more or less constant state of mild deprivation.

Use of significant others. When a pupil admires attributes or characteristics embodied by his teacher, at least two positive effects occur: (a) the pupil is more likely to desire to perform tasks asked of him by his teacher; (b) the pupil is more likely to imitate the performances of the teacher. The same is true of other individuals who become significant for the pupil. These facts can be used to good effect by the teacher. For example, if the class leader supports the notion of producing a class play or newspaper, the probability is that other children in class will be supportive In another vein, time spent with a significant other may be used as a reinforcer for improved school performance. Significant others who perform tasks proficiently that the pupil finds particularly undesirable may effect a change in the child's motivation to perform the task. The teacher should consciously look for ways to use the significant others of a child when developing a motivational strategy.

Premack Principle. The Premack Principle states that, for any two activities in which an individual can engage, the activity with the higher probability of occurrence can be used to reinforce the activity with the lower probability of occurrence. There are many opportunities to apply this principle in schools. For instance, the viewing of a favored film (high probability behavior) may be made contingent upon completion of an undesirable or monotonous seat work assignment (low probability behavior). A special treat after lunch may be made contingent upon the use of good table manners during lunch. Such high and low probability behaviors are not hard to discover. However, as in the use of significant others, the teacher must consciously look for high & low probability behavior and organize her class in a way that will make use of the Premack Principle. Implementation is easy after the initial groundwork is accomplished.

Token economy or token system. The token economy is not a condition of motivation, per se. Rather, it is a complex combination of motivational conditions organized in such a way that predetermined behavior is reinforced secondarily on a predetermined schedule. Other conditions like amount of reinforcement, type of reinforcer, and delay of reinforcement are spelled out in advance as well. It is a motivational strategy which can be applied to several children because its very structure allows children to individualize in terms of the specific reinforcers obtained. This is accomplished through the use of tokens, which may take the form of poker chips, holes punched in a token card, or checks made by the teacher on a token card. Many other creative tokens have been used.

Tokens are analogous to the currency used in the U.S. Monetary System. Pupils earn tokens by performing various work desired of school children. They are paid for the work with tokens. The tokens are then used as money to purchase goods and services which are available in the economy. The goods and services are known as "back-ups" in token economy parlance. Back-ups should be available in many levels of value. That is, pupils should have low priced back-ups as well as moderate and high priced back-ups. This will allow pupils who earn "low wages" to be reinforced a small amount even though they have not worked proficiently; on the other hand, it encourages high "wage earners" to learn and practice saving for more expensive back-ups. Low "wage earners" often observe the contrast between their buying power and that of "high wage earners" and become motivated to earn more tokens by attaining higher performance levels.

What kinds of back-ups are to be used? They should be appropriate to the age of the youngsters in class in the first place. For instance, teenagers will seldom pay to be first in line or finger paint. These back-ups would probably be very appropriate in a first grade class, however. Second, the back-ups ought to be selected with the reinforcer preferences of individual pupils in mind. For example, if Carl has an unusual interest in submarines and airplanes, the teacher should ensure that such high probability behavior is available as a back-up. The teacher might identify these back-ups specifically with Carl in mind: (a) age appropriate stories about pilots, aviation, and the submarine service; (b) 30 minutes in the library; (c) model airplanes and submarines; (d) photographs or drawings of airplanes and submarines. An expensive reference book on aviation might be a back-up which Carl could only earn by saving all year. In summary, the back-ups should be selected with great care. If those selected are not greatly desired by the children in a class, the token economy will certainly fail.

How are the desired tasks identified, the completion of which will require reinforcement by the teacher? Like the selection of back-ups, two methods are used. First, determine those important tasks which conform with the role of the appropriately behaved pupil. Presumably, they would include such tasks as participation in class discussions, accurate completion of seatwork and homework assignments, acquiring permission to engage in some types of behavior, and so forth. Since the teacher cannot reinforce every appropriate behavior of every pupil, nor even intermittently reinforce such behavior, (s)he should focus on those which require improvement among the class in general. Therefore, if scores on tests are lower than desirable, the teacher might award tokens for improved test scores. The second method of selecting reinforceable tasks is to key the selections to individual children. Therefore, Sam might be reinforced for legible handwriting, Sally for improved grooming, and Jake for keeping his desk neat. Other pupils would not be reinforced with tokens for such behavior since they do not represent weaknesses for other children. Of course, the children are intermittently reinforced through praise, high marks on report cards, positive notes to the child's parents, etc.

A major difficulty faced by teachers developing token economics is the matching of pay-offs (or the number of tokens given for a particular desired behavior) to the prices for back-ups. Obviously, the amount of reinforcement should be large enough to have a motivating effect, but not so large as to "bankrupt" the teacher. These difficulties can be minimized simply by knowing the children well. Relatively higher "wages" should be paid for behavior which is more resistant to change, while lower pay-offs should be paid for behavior which is less resistant to improvement. Errors in predicting such relationships can lead to unequitable wages among the children and ultimately a chaotic monetary system. Since some errors are likely to be made, even when teachers are good predictors of the effects of pay-offs, teachers should be aware that changes are necessary in the system in order to make adjustments when inequities occur. This remains true throughout the course of the implementation of token economy. For instance, when Sam, referred to earlier, habitually maintains a clean desk, the logic for paying him for the behavior no longer applies. In fact, if scheduling the reinforcement and the frequency of reinforcement have been handled correctly, the frequency of reinforcement will have been reduced very gradually to a level which is consistent with life in the world outside the classroom. Some teachers are surprised to learn that children almost always understand the logic of eventually eliminating pay-offs for behavior. They readily accept the fact that the skills for which they receive tokens in the third grade will not qualify for a pay-off in fourth or fifth grade.

Before now, the reader has probably wondered how the teacher pays for a token economy. It is obvious that back-ups often cost money. The answer is not simple. Much of the cost can be offset by paying close attention to the possibility of selecting back-ups which are free. Here are some back-ups which cost nothing in terms of money: Receive free time to play a game, invite a friend to lunch, view film on Friday, run errands, lead a class discussion, feed fish, pop milk cartons, organize a bulletin board, and make a phone call. For young children, these possibilities can greatly assuage costs; it is more difficult where older youngsters are concerned.

In order to obtain back-ups which would ordinarily cost money, the teacher must be more creative. For instance, some businesses, in return for publicity or simply for good public relations, will provide back-ups. Here are some businesses to consider: theatre (free tickets), quick food restaurants (hamburgers, french fries, etc.), hobby shops (models, puzzles, tropical fish), department stores (toys, tools, stockings, clothing), record stores, bowling alleys (free tickets), and horseback riding stables (free rides). Another possibility, particularly when a back-up is intended for a specific child and is costly, involves separate contracting with the parents of pupils. Many parents are more than willing to provide a new bicycle for their child in return for significantly improved school performance. One must be careful when approaching parents, however. First, there may be legal or administrative problems involved. Therefore, the teacher should consult with administrative officials beforehand. Second, many parents are diametrically opposed to "bribing" children for adequate school performance. It is possible to overcome such attitudes, but the task must be approached with diplomacy. In summary, the teacher must innovate by considering circumstances in the community when trying to obtain financial support for back-ups. With a little thought and problem solving, many ideas will present themselves (e.g., obtain out-dated books from the city library or school system).

As may be surmised from the preceding paragraph, token economies are controversial. In this section, some of the reasons for the controversy will be discussed. The reader will be left to judge the viability of implementing a token economy in his/her own classroom. One should keep in mind however, that circumventing some of the controversial issues may simply lead to a token economy which is too distorted to have a powerful effect. For instance, the avoidance of all reinforcers which cost money will probably lead to a system which is more trouble than it is worth.

Proponents of token economies point out their many advantages. For example, tokens avoid the occurrence of satiation effects during a lesson. In effect, they take the place of the many M&M's that might have been dispensed if tokens were not used. In addition, tokens allow the teacher to maintain a more or less constant state of deprivation during the lesson. Since tokens can only be spent during predetermined periods, the child must wait for the ultimate reinforcer for which he is working. However, the tokens effectively provide the pupil with powerful secondary reinforcement in the meantime. Tokens are easier to dispense than most other reinforcers except verbal praise. However, by their very nature, token economies tend to increase the amount of praise given by forcing the teacher to pay attention to good behavior. The frequent pairing of token reinforcement with verbal praise usually increases the secondary reinforcing effect of the praise. It also makes the job of "weaning away" the tokens easier when mastery levels and overlearning are attained. An important advantage of token economies is that they can include every pupil in class, but at the same time provide each student with individualized back-ups.

Token economies do involve some problems (e.g., note the discussion on financial support). For instance, token economies take time for children to learn. This, of course, is time that might otherwise be spent on more traditional learning objectives. However, when one considers that pupils are learning how a money system can work (one which is similar to the one they will live with as an adult) and how to save for desired goods and commodities, the problem of time investment seems less severe. Under special circumstances, some teachers have been able to use real currency, which makes the learning much more functional. Transfer of training is part of the learning process itself.

Critics have called the use of tokens an academic form of bribery. However, bribery is defined as payment to an individual for performing an unlawful, unethical, or immoral act. Certainly token economies do not serve this function; rather, children are paid for performing lawful, ethical moral acts. In fact, the situation is very similar to that of the adult who is paid for his productive work on the job. Parents often respond to such rebuttal that children should not expect to be paid for the work they do at school. This is a philosophical issue which will not be considered here. However, the following line of thought would argue for the practice of paying children for their work. Token economies do not provide children with a pay-off for un-challenging work. In fact, a concerted effort is made to identify only those tasks which are difficult for the child to perform (either for cognitive or affective reasons). While it is true that adults do not generally expect to be paid for easy tasks (e.g., dressing), few adults would work for long at challenging tasks without pay or the expectation of ultimate lucrative pay (e.g., as when adults pay to attend college).

Token economies provide pupils with unusual and undesirable opportunities and temptations to engage in theft. When ordinary poker chips or bottle caps are used as tokens, children sometimes steal from one another. In addition, pupils may bring "counterfeit money" into the system by raiding an available soft drink machine for bottle caps. To the extent that the selection of common objects as tokens creates an "open invitation" for theft and counterfeiting, such a circumstance is clearly undesirable. However, the circumstance does provide the teacher with an opportunity to show how fiat money inflates the money supply and demeans the value of all the money in the system.

This beneficial outcome does not nearly overcome the negative effect of having to deal with the inappropriate behavior, of course. In any case, teachers can avoid the situation altogether by selecting rare objects as tokens (e.g., buttons of a particular type) or by using a hole punch in a shape which pupils are unable to duplicate (e.g., diamond, star).

As can be determined from the foregoing discussion, token economies are complex systems for managing the behavior of children. Teachers with only textbook knowledge of their use can expect to face difficult problems when they attempt to implement such a system. With thoughtful judgment, the problems can be resolved with the result that classroom management becomes more effective.

Maintaining the Strength of Existing Behavior

Assuming the teacher is successful in increasing the strength of a behavior to a point which is considered satisfactory, how can that level of strength be maintained across time? If the behavior, when it occurs, is entirely ignored, the answer is that the behavior will not be maintained. Eventually, it will cease to be seen entirely. Learned behavior must continue to receive some degree of reinforcement if it is to be maintained. The primary method for ensuring that a behavior continues to be reinforced, and thus maintained, following instruction is known as "thinning the schedule" or reinforcement fading. This method and three secondary methods will be described in the following sections.

Thinning the schedule. This term refers to the process of decreasing the frequency with which a behavior is reinforced. A variable ratio schedule might be thinned from one reinforcement for every three responses on the average (i.e., VR:3) to one reinforcement for every five responses on the average (VR:5). A variable interval schedule might be thinned from a VI:10 to a VI:12. Such small changes in the ratio or timing of reinforcement are not detectable by most children. Behavior is maintained or actually accelerated as a result. After repeatedly thinning the schedule in this way, the provision of reinforcement becomes progressively easier for the teacher and even more beneficial, the schedule becomes more similar to the levels available in the natural environment. If verbal reinforcement has been consistently paired with the scheduled reinforcer, it is possible for the verbal reinforcers to carry the load of maintaining the behavior. Many teachers are able to intuit how quickly to shift from relatively "rich" schedules to thinner schedules. Teachers who are inexperienced with this process should, however, be more systematic, perhaps recording the timing or ratio explicitly to ensure that they are "on schedule." This is important because, if a schedule is thinned too quickly, the current level of performance may not be maintained, or worse, the behavior may cease to occur entirely. The rule of thumb is: If error is unavoidable, be certain that the error results in thinning the schedule too gradually and not too quickly.

Limited hold. This process adds one requirement to the usual interval schedule. It requires that the first desired behavior following a timed interval occur within a specified period of time. Therefore, if the desired behavior (e.g., writing a correct answer to an addition fact) did not occur within say, 30 seconds following the required interval (e.g., seven minutes on a VI:4 schedule), no reinforcement would occur on that trial. A new interval would be started and following the termination of that interval, if the behavior *did* occur within 30 seconds, the behavior would be reinforced. Although the example deals with a VI schedule, the process can be used for naturally occurring *fixed interval* schedules, such as due dates for term papers and the like.

Differential reinforcement of high rates. Some classroom behavior emitted by students is appropriate and well established, but occurs at frequencies considered too low for successful functioning. Or, behavior which was previously exhibited at a level considered acceptable falls to an unacceptable level. In either case, differential reinforcement of high rates (DRH) may be used to maintain the behavior at a more desirable level. Some children perform highly accurate seatwork, but work at a speed which would not allow them to succeed in years to follow, for example. The teacher might withhold reinforcement for accurate work and begin to reinforce only accurate work which is accomplished more quickly (i.e., at a higher rate). Other children dawdle when preparing to go to lunch or recess, forcing other children to wait. The teacher might reinforce such a child only on those occasions when he was fully prepared within two minutes.

Differential reinforcement of low rates. This operation is the reciprocal of the one described above. Differential reinforcement of low rates (DRL) is used when a child performs an appropriate behavior, but at too high a rate for success. An example would be the child who talks so much he literally "takes over" any discussion in which he engages. Willingness to talk is certainly an activity we want to encourage in children, but the behavior can be carried too far. If a DRL schedule were used, the teacher would reinforce the pupil for talking only if he produced say, 40 words per minute or fewer during a class discussion. Other behavior which might be reinforced with a DRL schedule follows: over-eating, over-assertion, and "gushy" politeness.

Reducing the Strength of Existing Behavior

Decreasing the strength of undesirable behavior is, unfortunately, also part of a teacher's job. When children misbehave, it is important for the teacher to know how to use techniques which have proven effectiveness. In the following sections, six conditions are discussed which lead to the reduced strength of undesirable behavior.

Positive punishment. A decrease in the strength of a behavior which results from the presentation of a positive punisher is known as positive punishment. A positive punisher is any object, event, or idea which reduces the strength of the behavior it follows. Examples of positive punishers commonly cited in the literature are spanking, public ridicule, electrical shock, and angry reprimands. These examples probably do represent generalized positive punishers (i.e., punishers which have similar effects on most of the population), but it would be a mistake to assume that they are punishers for all children. The author has observed children who did not "bat an eye" when paddled vigorously by authority figures. The reader may know of children for whom public ridicule has no apparent effect. Other disclaimers could be presented. However, the conclusion which must be reached is that positive punishers (and negative punishers which will be discussed next) may only be determined by observing their effects on the behavior they follow. Therefore, it is possible to find that some children are effectively punished when given public commendations for their scholarly work or good citizenship.

In order to use positive punishment, the teacher simply waits for the occurrence of the behavior to be reduced in strength and, when the behavior is observed, presents the pupil with the punisher. Because the pupil wishes to avoid the punisher (e.g., a slap on the hands, an angry look) in the future, the behavior which caused the positive punisher to be presented is reduced in strength (i.e., less likely to occur in the future).

The U. S. legal system is based on a system of punishment. One reason why many people conform to the law is to avoid punishment for breaking the law. One type of punishment invoked against law breakers is a jail sentence. Should the law breaker conform to the law following his sentence, positive punishment has occurred. That is because the punisher, a jail sentence, was added to the environment following the behavior (i.e., breaking the law). Another kind of punishment is also invoked in our legal system. It is called *negative punishment* or *response cost*. It occurs when a behavior is reduced in strength as a result of the removal of a positive reinforcer from the individual's environment. Court judges use response cost when they fine a person for breaking the law.

Teachers use similar conditions in the classroom. Children who misbehave may be given extra homework, sent to the principal's office for disciplinary action, or scolded. Such management practices are intended to reduce the strength of the misbehavior which preceded them.

Negative punishment (*response cost*). This motivational condition is the decrease in the strength of a behavior which results from the removal of a positive reinforcer from an individual. A *negative punisher* is any object or event which, when taken away from an individual as a consequence of a behavior, reduces the strength of that behavior. It is important to emphasize the term, *removal*, in the definition. In negative punishment, a valued object or event is taken away from the child. This implies that the child is in possession of the positive reinforcer immediately prior to punishment. This condition may easily be confused with *extinction*, in which a normally presented positive reinforcer is withheld. In this instance, the child does not actually possess the positive reinforcer at the time the behavior occurs; since the positive reinforcer is withheld, the child never does possess the reinforcer. When a teacher confiscates a child's comic book because he read it during a math assignment, the condition used is negative reinforcement. Here are other examples of negative reinforcement: (a) a parent who fines a youngster $3.00 for staying out past curfew; (b) a teacher who takes away points on an assignment because the work was performed sloppily; (c) the teacher who takes away a child's lunchtime dessert because he used profanity; (d) the preschool teacher who turns off the lights in the classroom when children are misbehaving.

Negative punishment is most effectively used in conjunction with a token economy (see presentation above). When children behave well, they are reinforced positively with the presentation of tokens. In contrast, when they behave inappropriately, tokens may be taken away. In many classrooms which do not use a token economy, the children possess few objects or events which may be legitimately taken away.

Extinction. This is the reduction in the strength of a behavior which occurs when reinforcement for a previously reinforced behavior is discontinued or withheld. Assume that Americans suddenly stopped receiving paychecks for their productive work. Following inquiries, they were told that, for an indefinite period, employees would receive no pay for their work. It is very likely that many Americans would choose to stop working. Although we would not wish to reduce productive behavior (as in the example), extinction can be used efficaciously to reduce nonproductive or undesirable behavior.

In the classroom, it is not uncommon to find students who are either positively or negatively reinforced as a consequence of undesirable behavior. For instance, teachers may unconsciously positively reinforce a pupil for pretending to be ill by sympathizing and ministering to his "difficulties." When other pupils laugh at a pupil's undesirable antics, he may be reinforced by their laughter. When children goad a pupil to perform some misbehavior (e.g., draw on a bathroom wall), such goading may constitute an aversive stimulus and negative reinforcement may result. One way to reduce such misbehavior is to extinguish it (i.e., withhold further reinforcement following its occurrence).

It may be difficult to use extinction effectively. First, the teacher is seldom aware that the pupil is being reinforced for misbehavior. Often, when the teacher is the one reinforcing the undesirable behavior, an external, objective observer must be brought into the classroom in an attempt to uncover the consequences in effect. Second, when pupils are themselves reinforcing undesirable behavior, such pupils' cooperation must be enlisted by the teacher. That is, they must be willing to discontinue their reinforcement. Sometimes students are unable or unwilling to cooperate. Third, extinction leads to reactions in the pupil which may be demoralizing for the teacher. For instance, misbehavior often becomes inflated immediately following the institution of extinction. It is as if the pupil assumes that no one has noticed his misbehavior and therefore, tries harder to obtain reinforcement. In addition, if the misbehavior was on a variable interval schedule of reinforcement, it may take a long time for extinction to take effect. It will be recalled that intermittent schedules tend to be more resistant to extinction than continuous schedules. In summary, although teachers like to use extinction (it assuages the need to focus on the undesirable behavior), the condition is usually less influential than other conditions discussed in this section.

Type of punisher. Whether or not there exist types of punishers which are analogous to the types of reinforcers discussed earlier (i.e., primary and secondary) has not been considered in the literature. Hypothetically, such "primary" punishers (e.g., physical pain) and "secondary" punishers (e.g., frowns, verbal rebuke) should exist and may effect behavior in ways reciprocal to primary and secondary reinforcers. "Secondary" punishers might be learned as secondary reinforcers are learned (i.e., through repetitious pairing with "primary" punishers). In any case, manipulation of such hypothetical conditions as these is not supported by research. This is not to say that such conditions do not exist; it simply means that such research has not been undertaken.

Specific punisher used. This condition was briefly considered in the introduction to this section. The main idea is that, while there are many generalized punishers (e.g., paddling, fines), each individual is affected by specific punishers in unique ways. The variation of affects is wide. Consequently, teachers must pay close attention to the punishers selected to reduce behavior. They should be matched to the individual characteristics of the child. In order to determine what punishers are most effective in influencing a particular child's motivation, the best method is to observe the effects of various punishers on the pupil's behavior.

In America, we are interested in preserving the human rights of our citizens, including not only adults, but children as well. Obviously, the selection of punishers may impinge on these human rights. Although it would be comforting to assume that all teachers in our country maintain a high regard for their pupils' human rights, this is probably a fallacious assumption. The wise teacher actively consults with significant others in the child's environment and obtains contractual agreement before implementing punishing contingencies in the classroom. This includes such individuals as the child's parents, administrators, and not least, the child himself. This effectively precludes the probability that the teacher will knowingly or unknowingly violate a child's rights as a human being.

Delay of punishment. Presumably, the longer punishment is delayed following the misbehavior, the less effective is the punishment. Unfortunately, such a phenomenon has not been widely investigated. The teacher should consider this fact before deciding how swiftly punishment should be meted out as a result of misbehavior.

Severity of punishment. Research has shown that the severity of the punishment used has a marked effect on the behavior it follows. Briefly, the rule of thumb is: The more severe the punishment, the greater the reduction in the misbehavior. This is another instance in which the teacher can make only one correct choice, but can err in two ways. If the punishment is too mild, the pupil will be unaffected by it. If the punishment is too severe, a profound reduction in the strength of the misbehavior may result, but anger and hostility are likely to result as side effects. The "ideal" level of severity is difficult to achieve, particularly when one considers the fact that the same punishers have different effects on different individuals.

Because of the problematical nature of this condition, the wise teacher consults with others to arrive at an acceptable solution. This group should include the parents, administrators, and the child at a minimum. The agreement should be formalized contractually. If such agreement cannot be reached, other conditions must be used.

Satiation (*Negative Practice*; *Beta Method*). This condition was discussed at some length in the section on increasing the strength of existing behavior. As will be recalled, in that context, satiation was to be avoided. However, undesirable behavior can be successfully reduced in strength by consciously using the satiation effect. For example, when a father catches his son smoking a cigarette and then forces the child to smoke an entire pack without stopping, generally, satiation will occur. Often, especially if nausea occurs, smoking cigarettes is eliminated permanently. Children who have gotten sick eating green apples seldom repeat the episode. In some respects, satiation resembles another condition called overcorrection. When overcorrection is used, the pupil "corrects" his misbehavior to an extreme degree. For instance, when a pupil is discovered sticking chewing gum to the bottom of his desk, the teacher might demand that he remove the gum, not only from his own desk, but from every desk in the school. For both conditions, an important feature is that, to be maximally effective, the behavior must be repeated to a fairly extreme degree. The child who smokes only two cigarettes in a row may not be much affected; he may well surreptitiously smoke again. The same would be true for other examples.

Differential reinforcement of incompatible behavior and differential reinforcement of other behavior. Under some conditions, it is possible to decrease the strength of an undesirable behavior by increasing the strength of another, incompatible behavior. This is an example of differential reinforcement of incompatible behavior (DRI): When Johnny began to spend too much time out of his seat, wandering around the room, his teacher began to reinforce him whenever she noticed that he was in his seat. Obviously, if the child increases the amount of time spent in his seat, then out of seat time necessarily decreases. The great advantage of DRI is that the focus of attention is on a desirable behavior. Thus, the negative side effects of punishing contingencies (e.g., anger, dislike, hostility, vengence) are eliminated.

Another condition which is positive in nature and may serve to reduce the frequency of an undesirable behavior is called differential reinforcement of other behavior (DRO). For instance: When Johnny began to talk out too often in class without permission, his teacher began reinforcing him whenever he raised his hand for permission to talk. Notice that when DRO is used, it is possible that the behavior reinforced will increase in frequency without an accompanying decrease in the strength of the undesirable behavior. In the example above, Johnny may raise his hand for permission to talk more often, but he may maintain the same level of talking out as was true prior to implementation of DRO. For this reason, teachers should carefully measure changes in the undesirable behavior and avoid the mistake of assuming that, because the "other" behavior increases in strength, the misbehavior automatically decreases in strength.

Here is an important rule of thumb to keep in mind when either of these conditions is used: Use DRI or DRO when the undesirable behavior is not extreme (e.g., disruptive). When the behavior is extreme, use DRI or DRO in conjunction with some other condition (e.g., positive punishment, response cost) which directly influences the misbehavior. When such a dual system is used, the student receives feedback which helps him understand what not to do and what to do instead.

A final word on punishing contingencies. In educational circles, the use of punishment has received poor reviews. Professors in institutions of higher education caution trainees to avoid punishment at all costs. Teachers in the field are made to feel guilty on those occasions when they implement punishing consequences. Yet, it is a rare teacher who never considers punishment as the most viable motivational consequence in some circumstance. Rarer still is the teacher who has never used punishment to influence children's motivation.

It is the position of the author that, with due regard for the real dangers involved, the use of punishment should be once again accepted as an effective method of managing the behavior of growing, maturing youngsters in the schools. I do not deny the value derived from research which has shown us how punishment can do great harm to the quality of human lives. But perhaps it is now time to realize that punishment is not entirely heinous and may in fact have sound attributes.

As educators, we do handicapped children no favors when we allow them to maintain and even escalate their levels of abusive behavior, toward themselves and toward others. When teachers allow children to believe (through example) that the world at large will reinforce them for socially acceptable behavior and ignore unacceptable behavior, they do children a great disservice. If such a world could function successfully, perhaps we would all enjoy more comfortable lives. But the truth is, such a world could not exist. Even if an individual lived the life of a hermit, far from the nearest fellow human, nature would punish him for failing to conduct his life in a manner consistent with ecological rules.

What we should be striving for in education is a consistent reduction in the need for punishment, not prohibition of it. Such an approach has no possibility for success.

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CHAPTER FIVE

THE ARITHMETIC DOMAIN

Broad Skills, Enabling Skills,
Specific Skills, and Record Sheet
Arithmetic Domain

The Arithmetic Domain

In this chapter and those to follow, materials are presented in a particular sequence. Here is the sequence: (a) Broad skills, enabling skills, specific skills, and record sheet for pupil attainment of the skills; (b) Taxonomy of goals and objectives; (c) Instructional strategies.

Broad skills, enabling skills, and specific skills are simply "shorthand" terms which allow the teacher a quick reference and guide to the structure and organization of the domain. Each skill is more thoroughly defined in its objective in the taxonomy of goals and objectives. Both skills and their corresponding objectives are tagged with identical numerals for easy cross-referencing. Each skill listed has a convenient space which allows the teacher to record a pupil's pre- and post-test scores on a test designed to assess mastery of the objective.

The taxonomy of goals and objectives, as noted above, is intended to define precisely what is meant by the more ambiguous "shorthand" terms known as skills. For example, the first skill in the arithmetic domain, an enabling skill called, "write numerals, 0-10," is defined this way in the taxonomy of goals and objectives:

> Given pencil and paper, the student will write within thirty seconds the numerals zero (0) through ten (10) in sequence without assistance.

Notice that the objective specifies an observable behavior (i.e., ... will write..."), important conditions under which the behavior will occur (i.e., "Given pencil and paper ...," "... without assistance"), and a criterion for minimally acceptable performance (i.e., "... within thirty seconds..."). Although the specification of these three components was not possible for every domain, an earnest attempt was made to reduce ambiguity in each objective specified. This allows substitute and new teachers to better grasp the material to be imparted to pupils. When possible, taxonomies and skills were roughly partitioned into levels.

The final part of the sequence, that is, the instructional strategies, are necessarily incomplete. Only a selection of strategies for each domain is presented in order to give the reader examples of how the conditions of learning and motivation may be built into a lesson plan which the teacher can use in the classroom. The reader should be aware that the conditions which influence learning and motivation can be combined in an infinite number of ways. Clearly, any of the strategies presented could be improved upon if the teacher has information about the characteristics of the child to whom the lesson will be presented.

TAXONOMY OF GOALS AND OBJECTIVES

ARITHMETIC DOMAIN

LEVEL	Pre Test	Post Test	(1)NUMBER & NUMERATION	Pre Test	Post Test	(2)OPERATIONS	Pre Test	Post Test	(3)MEASUREMENT, GEOMETRY, & RELATIONS	Pre Test	Post Test	(4)PROBLEM SOLVING	Pre Test	Post Test	(5)TOOLS & RELATIONS
1	____	____	1.1.1 Write Numerals, 0-10	____	____	1.2.1 Combine Objects, 1-10									
	____	____	1.1.1.1 Recite Numbers, 1-10	____	____	1.2.2 Separate Objects, 1-10									
	____	____	1.1.1.2 Associate Numbers Dictated w/0-10												
	____	____	1.1.2 Write Numerals /Dots, 0-10												
	____	____	1.1.2.1 Verbalize Numbers/Pictured Objects, 0-10												
	____	____	1.1.2.2 Associate Numbers Dictated w/Dots, 0-10												
	____	____	1.1.2.3 Associate Numerals w/Dots, 0-10												
2	____	____	2.1.1 Write Numerals, 0-20	____	____	2.2.1 Add/Sums to 6	____	____	2.3.1 Write Coin Values from Pictures	____	____	Write Facts/ Pictured Problems			
	____	____	2.1.1.1 Recite Numbers, 1-20	____	____	2.2.2 Subtract/ Minuends to 6				____	____	Solve Word Problems/Sums to 10			
	____	____	2.1.1.2 Associate Numbers Dictated w/ Numerals, 0-20	____	____	2.2.3 Add/Sums to 10									
	____	____	2.1.2 Write Numerals/ Dots, 0-20	____	____	2.2.4 Subtract 2, 1 Digit/ Minuends to 10									
	____	____	2.1.3 Write Numerals, 0-100	____	____	2.2.5 Add 3, 1 Digit/No Regrouping									
	____	____	2.1.3.1 Recite Numbers, 0-100	____	____	2.2.6 Add 2 Digits & 1 Digit Sums to 20									
	____	____	2.1.3.2 Associate Numbers Dictated w/ Numerals, 0-100	____	____	2.2.7 Subtract 1 Digit from 2 Digits/ Minuends									
				____	____	2.2.8 to 20									
				____	____	2.2.8 Add 3 Digits/ Sums to 20									

LEVEL	Pre Test	Post Test	(1) NUMBER & NUMERATION	Pre Test	Post Test	(2) OPERATIONS	Pre Test	Post Test	(3) MEASUREMENT, GEOMETRY, & RELATIONS	Pre Test	Post Test	(4) PROBLEM SOLVING	Pre Test	Post Test	(5) TOOLS & RELATIONS
	___	___	3.1.1 Identify Ordinals/ 10ths	___	___	3.2.1 Write Addition Facts/ Timed	___	___	3.3.1 Identify Coin Value/ Words	___	___	3.4.1 Identify Facts & Operations/ One-Step Word Problems	___	___	3.5.1 Use Calculator
	___	___	3.1.2 Write, 10-100 by 10's	___	___	3.2.2 Write Subtraction Facts/ Timed	___	___	3.3.2 Identify Time/hr., ½ hr.	___	___	3.4.2 Solve One-Step Word Problems			
	___	___	3.1.3 Associate Expanded Notation w/10's & 1's	___	___	3.2.3 Add 2, 2 Digits/ No Regrouping	___	___	3.3.3 Use Arbitrary Measurement						
3	___	___	3.1.4 Associate Numerals w/ Expanded Notation, 10's & 1's	___	___	3.2.4 Subtract 2, 2 Digits/ No Regrouping	___	___	3.3.4 Measure Inches						
	___	___	3.1.5 Associate Unit Fractions w/ Pictured Diagrams	___	___	3.2.5 Add 2 Digits & 1 Digit/ Regroup	___	___	3.3.5 Measure Centimeters						
				___	___	3.2.6 Subtract 1 Digit from 2 Digits/ Regroup	___	___	3.3.6 Identify Heavier, Lighter Objects						
							___	___	3.3.7 Identify Hot, Cold, 5°						
	___	___	4.1.1 Write, 5-100 by 5's	___	___	4.2.1 Add 2, 2 Digits /Regroup	___	___	4.3.1 Identify Money/ Words	___	___	4.4.1 Identify Facts& Operations/ One-Step Word Problems	___	___	4.5.1 Use Multiplication Division
4	___	___	4.1.2 Write, 2-100 by 2's	___	___	4.2.2 Add 2, 3 Digits /Regroup	___	___	4.3.2 Identify Sequence /Number, da., wk., mo., yr.	___	___	4.4.2 Estimate /One-Step Word Problems			
	___	___	4.1.3 Associate Expanded Notation w/10's & 1's	___	___	4.2.3 Add 3, 2 Digits/ Regroup	___	___	4.3.3 Identify Time/¼ hr.	___	___	4.4.3 Solve One-Step Word Problems			
4	___	___	4.1.4 Identify Expanded Notation/3 Digits	___	___	4.2.4 Subtract 2, 2 Digits/	___	___	4.3.4 Identify Time/ Multiples						

Level 4 (Cont'd)

LEVEL	Pre Test	Post Test	(1) NUMBER & NUMERATION	Pre Test	Post Test	(2) OPERATIONS	Pre Test	Post Test	(3) MEASUREMENT, GEOMETRY, & RELATIONS	Pre Test	Post Test	(4) PROBLEM SOLVING	Pre Test	Post Test	(5) TOOLS & RELATIONS
4	___	___	4.1.5 Associate Fractions w/ Shaded Regions	___	___	4.2.5 Subtract 2, 3 Digits/Regroup	___	___	4.3.5 Measure Inches, ¼ in.						
	___	___	4.1.6 Identify Fractions	___	___	4.2.6 Write Multiplication Facts/5x12/Timed	___	___	4.3.6 Identify Equiv. in., ft.						
				___	___	4.2.7 Write Division Facts/60÷5/Timed	___	___	4.3.7 Measure mm., cm.						
				___	___	4.2.8 Multiply 2 Digits by 1 Digit/No Regrouping	___	___	4.3.8 Identify Equiv. mm., cm.						
				___	___	4.2.9 Divide 3 Digits by 1 Digit/No Regrouping	___	___	4.3.9 Read Thermometers, F°						
				___	___	4.2.10 Divide 2 Digits by 1 Digit/Remainder	___	___	4.3.10 Read Thermometers, C°						
				___	___	4.2.11 Add Proper Fractions/Like Denominators	___	___	4.3.11 Identify Weight on Pictured Scales (U.S. Standard Metric)						
				___	___	4.2.12 Subtract Proper Fractions/Like Denominators	___	___	4.3.12 Identify Equiv. oz., lb.						
							___	___	4.3.13 Identify Equiv. g., kg.						
							___	___	4.3.14 Identify Equiv. c., pt., qt.						

Level : Cont.

LEVEL	Pre Test	Post Test	(1)NUMBER & NUMERATION	Pre Test	Post Test	(2)OPERATIONS	Pre Test	Post Test	(3)MEASUREMENT, GEOMETRY, & RELATIONS	Pre Test	Post Test	(4)PROBLEM SOLVING	Pre Test	Post Test	(5)TOOL[illegible] RELA[illegible]
4							___	___	4.3.15 Identify Equiv. 1, kl.						
							___	___	4.3.16 Identify Circle, Square, Rectangle, Triangle w/ Name						
5	___	___	5.1.1 Identify Expanded Notation/4 Digits	___	___	5.2.1 Write Multi-Facts/10x12/Timed	___	___	5.3.1 Add, Subtract Money/Regroup	___	___	5.4.1 Identify Facts& Operations/Two-Step Word Problems	___	___	5.5.1 Interpret Picture Graphs
	___	___	5.1.2 Identify Numerator or Denominator	___	___	5.2.2 Write Division Facts/120÷10/Timed	___	___	5.3.2 Identify Time/hr., min., sec.	___	___	5.4.2 Estimate Two-Step Word Problems			
	___	___	5.1.3 Reduce Fractions	___	___	5.2.3 Multiply 2 Digits by 1 Digit/Regroup	___	___	5.3.3 Identify Equivalent in., ft., yd., mi.	___	___	5.4.3 Solve Two-Step Word Problems			
				___	___	5.2.4 Multiply 2, 2 Digits/Regroup	___	___	5.3.4 Identify Equivalent mm., cm., m., km.						
				___	___	5.2.5 Divide 2 Digits by 1 Digit/Regroup	___	___	5.3.5 Identify Equivalent oz., lb., Fractional lb.						
				___	___	5.2.6 Divide 3 Digits by 1 Digit/Regroup	___	___	5.3.5 Identify Equivalent oz., lb., Fractional lb.						
				___	___	5.2.7 Divide 3-4 Digits by 2 Digits/Regroup	___	___	5.3.6 Identify Equivalent c., pt., qt., gal.						
				___	___	5.2.8 Add 2 Proper Fractions/Sums < 1/Reduce	___	___	5.3.8 Compute Perimeters Polygons (U.S. Standard -Metric)						
				___	___	5.2.9 Add 2 Mixed Fractions/No Regrouping									

Level 5 (Cont'd)

LEVEL	Pre Test	Post Test	(1)NUMBER & NUMERATION	Pre Test	Post Test	(2)OPERATIONS	Pre Test	Post Test	(3)MEASUREMENT, GEOMETRY, & RELATIONS	Pre Test	Post Test	(4)PROBLEM SOLVING	Pre Test	Post Test	(5)TOOLS & RELATIONS
5				___	___	5.2.10 Subtract Mixed Fractions /No Regrouping /Reduce									
				___	___	5.2.11 Identify Properties of Whole Numbers									
6	___	___	6.1.1 Identify Numerals to Ten Millions w/ Names	___	___	6.2.1 Add 5, 5 or More Digits/ Regroup	___	___	6.3.1 Multiply Money/ Regroup	___	___	6.4.1 Identify Facts& Operations/ Two-Step Word Problems	___	___	6.5.1 Interpr Bar Gra /Simple
	___	___	6.1.2 Compare Common Fractions	___	___	6.2.2 Subtract 2, 5 Digits/	___	___	6.3.2 Add, Subtract sec., min., hr., da., wk., mo., yr./Regroup	___	___	6.4.2 Estimate Two-Step Word Problems			
	___	___	6.1.3 Identify L.C.D.	___	___	6.2.3 Multiply 2, 3 Digits/ Regroup	___	___	6.3.3 Interpret, Dimension/ Scale Drawing	___	___	6.4.3 Solve Two-Step Word Problems			
	___	___	6.1.4 Change Improper Fractions to Mixed Fractions	___	___	6.2.4 Divide 3 or More Digits by 2 Digits/ Remainder	___	___	6.3.4 Add, Subtract in., ft., yd., mi./Regroup						
	___	___	6.1.5 Change Mixed Fractions to Improper Fractions	___	___	6.2.5 Add 2 Proper Fractions /Convert Sums/ Reduce	___	___	6.3.5 Add, Subtract mm., cm., m., km./Regroup						
	___	___	6.1.6 Identify Exponential Notation /Millions	___	___	6.2.6 Add 2 Like Mixed Fractions /Regroup /Reduce	___	___	6.3.6 Read Thermometer F°, C°						
				___	___	6.2.7 Subtract Like Mixed Fractions /Regroup /Reduce	___	___	6.3.7 Identify Equiv. lb., T., Fractional T.						

Level 6 (Cont'd)

LEVEL	Pre Test	Post Test	(1)NUMBER & NUMERATION	Pre Test	Post Test	(2)OPERATIONS	Pre Test	Post Test	(3)MEASUREMENT, GEOMETRY, &	Pre Test	Post Test	(4)PROBLEM SOLVING	Pre Test	Post Test	(5)TOOLS & RELATIONS
6				___	___	6.2.8 Add 2 Unlike Fractions /Reduce	___	___	6.3.8 Add Subtract oz., lb., T./Regroup						
				___	___	6.2.9 Subtract Unlike Fractions /Reduce	___	___	6.3.9 Add, Subtract g., kg./Regroup						
				___	___	6.2.10 Add 2 Unlike Mixed Fractions /Reduce	___	___	6.3.10 Add, Subtract c., pt., qt., gal./Regroup						
				___	___	6.2.11 Subtract Unlike Mixed Fractions Reduce	___	___	6.3.11 Add, Subtract ml., l., kl./ Regroup						
				___	___	6.2.12 Multiply /Whole Numbers by Fractions /Reduce	___	___	6.3.12 Compute Perimeter Parallelograms (U. S. Standard Metric)						
				___	___	6.2.13 Multiply 2 Proper Fractions /Reduce									
7	___	___	7.1.1 Identify Equivalent Fractions/ Decimals	___	___	7.2.1 Divide 3 or More Digits by 3 or More Digits/ Fraction Remainder	___	___	7.3.1 Divide Money/ Regroup	___	___	7.4.1 Identify Facts& Operations/ Two-Step Word Problems	___	___	7.5.1 Interpret Bar Graphs /Compound
	___	___	7.1.2 Change Fractions to Decimals	___	___	7.2.2 Multiply 2 Mixed Fractions /Reduce	___	___	7.3.2 Identify Equivalent tsp., tbs. oz., c., pt., qt., gal.	___	___	7.4.2 Estimate /Two-Step Word Problems	___	___	7.5.2 Compute Average

Level 7 (Cont'd)

LEVEL	Pre Test	Post Test	(1)NUMBER & NUMERATION	Pre Test	Post Test	(2)OPERATIONS	Pre Test	Post Test	(3)MEASUREMENT, GEOMETRY, & RELATIONS	Pre Test	Post Test	(4)PROBLEM SOLVING	Pre Test	Post Test	(5)TOOLS & RELATIONS
	___	___	7.1.3 Identify Decimals /Names	___	___	7.2.3 Divide Whole Numbers by Fractions /Reduce	___	___	7.3.3 Identify Lines, Angles, Rays, Line Segments	___	___	7.4.3 Solve Two-Step Word Problems			
	___	___	7.1.4 Round off to Millions	___	___	7.2.4 Divide Fractions by Whole Numbers /Reduce	___	___	7.3.4 Compute Area/ Square, Circle, Triangle, Rectangle (U.S. Standard -Metric)						
7	___	___	7.1.5 Round Decimals /10ths - 100ths	___	___	7.2.5 Divide 2 Proper Fractions /Reduce	___	___	7.3.5 Compute Circumference (U.S. Standard -Metric)						
				___	___	7.2.6 Divide 2 Mixed Fractions /Reduce									
				___	___	7.2.7 Add, Subtract Mixed Decimals /100ths									
				___	___	7.2.8 Multiply Decimals									
				___	___	7.2.9 Divide Mixed Decimals by Whole Numbers									
				___	___	7.2.10 Divide Whole Numbers by Mixed Decimals									
				___	___	7.2.11 Divide Decimals /4 Digits by 2 Digits									

Level 7 (Cont'd)

LEVEL	Pre Test Post Test (1)NUMBER & NUMERATION	Pre Test Post Test (2)OPERATIONS	Pre Test Post Test (3)MEASUREMENT, GEOMETRY, & RELATIONS	Pre Test Post Test (4)PROBLEM SOLVING	Pre Test Post Test (5)TOOLS & RELATIONS
7		____ ____ 7.2.12 Divide 3-4 Digits by 2 Digits (Whole Numbers) /Remainder to 1000ths			
8	____ ____ 8.1.1 Identify Equivalent Decimals /Percents	____ ____ 8.2.1 Identify % of a Number	____ ____ 8.3.1 Identify Equivalent Years, Centuries, Decades	____ ____ 8.4.1 Identify Facts& Operations/ Two-Step Word Problems	____ ____ 8.5.1 Interpret Line Graphs/ Simple
	____ ____ 8.1.2 Identify Equivalent Percents/ Mixed or Common Fractions	____ ____ 8.2.2 Identify Number from % Rate	____ ____ 8.3.2 Identify Time Zones /U.S.	____ ____ 8.4.2 Estimate /Two-Step Word Problems	____ ____ 8.5.2 Interpret Line Graphs/ Compound
	____ ____ 8.1.3 Identify Equivalent Mixed or Common Fractions /Percents	____ ____ 8.2.3 Identify % One Number is of Another	____ ____ 8.3.3 Identify Geometric Figures w/ Names	____ ____ 8.4.3 Solve Two-Step Word Problems	____ ____ 8.5.3 Interpret Circle Graphs
		____ ____ 8.3.4 Compute Volumes /Solid Geometric Shapes (U.S. Standard Metric)			
E.G.	Pre Test ________ Post Test ________ END GOAL				

LEVEL 1

TOPIC 1: NUMBER AND NUMERATION

1.1.1 The student will write the numerals zero (0) through ten (10) in sequence.

Given pencil, and paper, the student will write within thirty (30) seconds the numerals zero (0) through ten (10) in sequence without assistance.

Minimum: 11

1.1.1.1 The student will recite the numbers one (1) through ten (10) in sequence.

The student will recite within ten (10) seconds the numbers one through ten (1-10) in sequence without assistance.

Minimum: 10

1.1.1.2 The student will associate the dictated number zero - ten (0-10) with the written numeral.

Given ten (10) dictated numbers zero - ten (0-10) and four (4) choices for each, the student will circle the correct numeral.

Minimum: 11

1.1.2 The student will write the numeral for each set of dots.

Given ten (10) sets of dots, each with zero (0) to ten (10) dots, the student will count the number of dots and write the correct numeral for each set.

Minimum: 10

1.1.2.1 The student will tell the cardinal number zero - ten (0-10) of pictured objects.

Given ten (10) groups of pictured objects, the student will tell the cardinal number for each group.

Minimum: 10

1.1.2.2 The student will associate a dictated number zero - ten (0-10) with the cardinal number.

Given ten (10) dictated numbers zero - ten (0-10), each with three (3) sets of dots representing cardinal numbers, the student will select the set of dots represented by each dictated number.

Minimum: 10

1.1.2.3 The student will associate the numerals zero - ten (0-10) with the cardinal number.

Given ten (10) numerals, each with three (3) sets of dots representing cardinal numbers, the student will select the sets of dots represented by each numeral.

TOPIC 2: OPERATIONS

1.2.1 The student will combine groups of objects one - ten (1-10).

Given ten (10) groups of objects, two groups at a time, the student will combine the groups into one group.

Minimum: 5

1.2.2 The student will separate groups of objects one - ten (1-10).

Given five (5) groups of objects, one group at a time, the student will separate each group to form two (2) groups.

Minimum: 5

LEVEL 2

TOPIC 1: NUMBER AND NUMERATION

2.1.1 The student will write the numerals zero (0) through twenty (20) in sequence.

Given pencil and paper, the student will write, within ninety (90) seconds, the numerals zero through twenty (0-20) in sequence without assistance.

Minimum: 21

2.1.1.1 The student will recite the numbers one through twenty (1-20) in sequence.

The student will recite, within twenty-five (25) seconds the numbers one through twenty (1-20) in sequence without assistance.

Minimum: 20

2.1.1.2 The student will associate a random selection of dictated numbers zero through twenty (0-20) with the written numerals.

Given ten (10) dictated numbers zero through twenty (0-20) and four (4) choices for each, the student will circle the numeral heard.

Minimum: 10

2.1.2 The student will write the numeral for each set of dots.

Given twenty (20) sets of dots, each with zero (0) to twenty (20) dots, the student will count the number of dots and write the numeral for each set.

Minimum: 18

2.1.3 The student will write numerals from zero to one hundred (0-100).

Given a matrix (form), the student will write the numerals from zero to one hundred (0-100) in sequence without assistance, using one numeral per box within the matrix.

Minimum: 95

2.1.3.1 The student will recite the numbers one-hundred (1-100).

The student will recite within two minutes the numbers one-hundred (1-100) in sequence without assistance.

Minimum: 98

2.1.3.2 The student will associate the dictated number zero-hundred (0-100) with the written numeral.

Given twenty (20) dictated numbers, and four (4) written choices for each, the student will select the correct answer.

Minimum: 18

TOPIC 2: OPERATIONS

2.2.1 The student will add two (2) numbers having sums less than six (6).

Given ten (10) addition problems, the student will compute and write the correct sum for each problem.

Minimum: 9

2.2.2 The student will subtract two (2) numbers having minuends less than six (6).

Given ten (10) subtraction problems, the student will compute and write the correct difference for each problem.

Minimum: 9

2.2.3 The student will add two numbers having sums less than ten (10).

Given ten (10) addition problems, the student will compute and write the correct sum for each problem.

Minimum: 9

2.2.4 The student will subtract two (2) numbers having minuends less than ten (10).

Given ten (10) subtraction problems, the student will compute and write the correct difference for each problem.

Minimum: 9

2.2.5 The student will add three (3) single digit numbers having sums less than ten (10).

Given ten (10) addition problems, the student will compute and write the correct sum for each problem.

Minimum: 9

2.2.6 The student will add two (2) numbers having sums less than twenty (20).

Given ten (10) addition problems, the student will compute and write the correct sum for each problem.

Minimum: 9

2.2.7 The student will subtract two (2) numbers having minuends less than twenty (20).

Given ten (10) subtraction problems, the student will compute and write the correct difference from each problem.

Minimum: 9

2.2.8 The student will add three (3) single digit numbers having sums less than twenty (20).

Given ten (10) addition problems, the student will compute and write the correct sum for each problem.

Minimum: 9

TOPIC 3: MEASUREMENT, GEOMETRY, AND RELATIONS

2.3.1 The student will write the total numerical value of pictured coin combinations.

Given five (5) pictured combinations of coins, the student will write the value of each combination.

Minimum: 5

TOPIC 4: PROBLEM SOLVING

2.4.1 The student will write facts from pictured problems.

Given five (5) pictured problems, the student will write the facts.

Minimum: 5

2.4.2 The student will solve word problems requiring addition of two (2) numbers having sums less than ten (10).

Given five (5) word problems, the student will write the correct answer for each problem.

Minimum: 5

LEVEL 3

TOPIC 1: NUMBER AND NUMERATION

3.1.1 The student will identify ordinal numbers from first through tenth.

Given ten (10) sets of ten (10) dots, each with one dot designated, and four (4) choices for each, the student will select the correct ordinal number for the designated dot.

Minimum: 10

3.1.2 The student will write the numerals to one hundred (100) by tens (10's), beginning with ten (10).

The student will write within one (1) minute the numerals to one hundred (100) by tens (10's) in sequence without assistance.

Minimum: 10

3.1.3 The student will associate numbers in expanded notation form with the numeral (tens and ones).

Given ten (10) numbers in expanded notation form, and four (4) choices for each, the student will select the correct numeral for the expanded form.

Minimum: 9

3.1.4 The student will associate a numeral with its expanded notation form (tens and ones).

Given ten (10) numerals, and four (4) choices for each, the student will select the correct expanded form for the numeral.

Minimum: 9

3.1.5 The student will associate a unit fraction with a pictured diagram.

Given ten (10) diagrams, each indicating a unit fraction, and four (4) choices for each, the student will select the correct unit fraction for the diagram.

Minimum: 9

TOPIC 2: OPERATIONS

3.2.1 The student will demonstrate mastery of the addition facts.

Given forty-eight (48) facts, the student will write within two and one half (2½) minutes the correct sum for each addition fact.

Minimum: 46

3.2.2 The student will demonstrate mastery of the subtraction facts.

Given forty (40) facts, the student will write within two and half (2½) minutes the correct difference for each subtraction fact.

Minimum: 38

3.2.3 The student will add two (2), two (2) digit addends with no regrouping required.

Given ten (10) addition problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

3.2.4 The student will subtract two (2), two (2) digit numbers with no regrouping required.

Given ten (10) subtraction problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

3.2.5 The student will add a one (1) digit addend to a two (2) digit addend with regrouping required.

Given ten (10) addition problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

3.2.6 The student will subtract a one (1) digit number from a two (2) digit number with regrouping required.

Given ten (10) subtraction problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

3.3.1 The student will identify the numerical value of coin combinations from words.

Given five (5) coin combinations in word form, and four (4) choices for each, the student will select the correct numerical value.

Minimum: 5

3.3.2 The student will identify time notation by the hour and half hour.

Given five (5) pictured clocks with settings on the hour and half-hour, and four (4) choices for each, the student will select the correct time notation for each setting.

Minimum: 5

3.3.3 The student will use arbitrary units of measure.

Given five (5) classroom items, the student will measure the items, record the measurements and indicate the units used.

Minimum: 5

3.3.4 The student will measure length in inches.

Given four (4) line segments, a twelve (12) inch ruler, and four (4) choices for each, the student will measure the line segments and select the correct length.

Minimum: 4

3.3.5 The student will measure length in centimeters. (Metric)

Given five (5) line sigments, a metric ruler, and four (4) choices for each, the student will measure the line segments and select the correct length.

Minimum: 4

3.3.6 The student will determine weight as being heavier or lighter by lifting objects.

Given five (5) sets of two (2) objects, each varying in weight, the student will tell which is heavier or lighter.

Minimum: 5

3.3.7 The student will identify temperature readings below forty degrees (40) as cold and above ninety (90) as hot on a pictured Fahrenheit thermometer.

Given four (4) pictured Fahrenheit thermometers, each with a temperature reading of forty degrees (40) and below, or ninety (90) and above, and two (2) choices for each, the student will select hot or cold for each temperature reading.

Minimum: 4

TOPIC 4: PROBLEM SOLVING

3.4.1 The student will identify the facts and operations required to solve one step word problems.

Given five (5) word problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 5

3.4.2 The student will solve one (1) step word problems.

Given ten (10) one step word problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

TOPIC 2: OPERATIONS

4.2.1 The student will add two (2), two (2) digit addens with regrouping required.

Given ten (10) addition problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

4.2.2 The student will add two (2), three (3) digit addends with regrouping required.

Given ten (10) addition problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

4.2.3 The student will add three (3), two (2) digit addends with regrouping required.

Given ten (10) addition problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

4.2.4 The student will subtract two (2), two (2) digit numbers with regrouping required.

Given ten (10) subtraction problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

4.2.5 The student will subtract two (2), three (3) digit numbers with regrouping required.

Given ten (10) subtraction problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

4.2.6 The student will demonstrate mastery of the multiplication facts through five times twelve (5x12).

Given forty (40) facts, the student will write within two (2) minutes the correct product for each multiplication fact.

Minimum: 39

4.2.7 The student will demonstrate mastery of the division facts through sixty divided by five (60÷5).

Given forty-five (45) facts, the student will write within two and one-half (2½) minutes the correct quotient for each division fact.

Minimum: 43

4.2.8 The student will multiply a two (2) digit factor by a one (1) digit factor with no regrouping required.

Given ten (10) multiplication problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

4.2.9 The student will divide a three (3) digit dividend by a one (1) digit divisor to obtain a two (2) digit quotient and no remainder.

Given ten (10) division problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

4.2.10 The student will divide a two (2) digit dividend by one (1) digit divisor and obtain a one (1) digit quotient and remainder.

Given ten (10) division problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

4.2.11 The student will add two (2) proper fractions with like denominators.

Given ten (10) addition problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

4.2.12 The student will subtract two (2) proper fractions with like denominators.

Given ten (10) subtraction problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

TOPIC 3: MEASUREMENT, GEOMETRY, AND RELATIONS

4.3.1 The student will identify money notation in dollars and cents from the word forms.

Given ten (10) amounts of money in word form, and four (4) choices for each, the student will select the correct notation.

Minimum: 9

4.3.2 The student will identify the correct sequence of the days and months, and the number of days, weeks and months in a year.

Part I
Given the days of the week in random order, the student will order the days in correct sequence.

Part II
Given the months of the year in random order, the student will order the months in correct sequence.

Part III

Given four (4) questions about the year, and four (4) choices for each, the student will select the correct answer.

Minimum:	Part I	7
	Part II	12
	Part III	4

4.3.3 The student will identify time notation by the quarter hour.

Given five (5) pictured clocks with settings on the quarter (¼) hour, and four (4) choices for each, the student will select the correct time notation for each setting.

Minimum: 5

4.3.4 The student will identify time notation in hours and multiples of five (5) minutes.

Given five (5) pictured clocks with settings on hours and multiples of five (5) minutes, and four (4) choices for each, the student will select the correct time notation for each setting.

Minimum: 5

4.3.5 The student will measure length in inches and/or half inches.

Given five (5) line segments, a twelve (12) inch ruler, and four (4) choices for each, the student will measure each line and select the correct length.

Minimum: 5

4.3.6 The student will identify equivalent linear measures in inches and feet.

Given five (5) linear measures, and four (4) choices for each, the student will select the correct equivalent measure.

Minimum: 5

4.3.7 The student will measure length in millimeters and centimeters. (Metric)

Given five (5) line segments, a metric ruler, and four (4) choices for each, the student will measure each line segment and select the correct length.

Minimum: 4

4.3.8 The student will identify equivalent linear measures in millimeters and centimeters. (Metric)

Given ten (10) linear measures, and four (4) choices for each, the student will select the correct equivalent measure.

Minimum: 9

4.3.9 The student will read (5) pictured Fahrenheit thermometers with different temperature readings, and four (4) choices for each, the student will select the correct temperature for each thermometer.

Minimum: 5

4.3.10 The student will read a pictured Celsius thermometer. (Centigrade)

Given five (5) pictured Celsius thermometers with different temperature readings, and four (4) choices for each, the student will select the correct temperature for each thermometer.

Minimum: 5

4.3.11 The student will identify the weight measure of an unknown object in ounces, pounds, grams, and kilograms as indicated on pictured scales.

Given five (5) pictured scales, each with the weight of an object indicated, and four (4) choices for each, the student will select the correct weight for each object.

Minimum: 5

4.3.12 The student will identify equivalent weight measures in ounces and pounds.

Given ten (10) weight units, and four (4) choices for each, the student will select the correct equivalent weight measure.

Minimum: 9

4.3.13 The student will identify equivalent weight measures in grams and kilograms. (Metric)

Given ten (10) weight units and four (4) choices for each, the student will select the correct equivalent weight.

Minimum: 9

4.3.14 The student will identify equivalent liquid measures in cups, pints, and quarts.

Given ten (10) liquid measure units, and four (4) choices for each, the student will select the correct equivalent measure.

Minimum: 9

4.3.15 The student will identify equivalent liquid measures in liters kiloliters. (Metric)

Given ten (10) liquid measure units, and four (4) choices for each, the student will select the correct equivalent measure.

Minimum: 9

4.3.16 The student will identify pictured plane (2D) geometric shapes. (circles, square, rectangle, triangle)

Given four (4) names of plane (2D) geometric shapes, and five (5) geometric drawings, the student will select the correct drawing for each geometric name.

Minimum: 4

TOPIC 4: PROBLEM SOLVING

4.4.1 The student will identify the facts and operations required to solve one (1) step word problems.

Given ten (10) one (1) step word problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

4.4.2 The student will estimate the solution for one (1) step word problems.

Given ten (10), one (1) step word problems, and four (4) choices for each, the student will estimate and select the correct answer for each problem.

Minimum: 9

4.4.3 The student will solve one step word problems.

Given ten (10), one (1) step word problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

TOPIC 5: TOOLS AND RELATIONS

4.5.1 The student will use a multiplication - division grid.

Given a multiplication - division grid, five (5) problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 5

LEVEL 5

TOPIC 1: NUMBER AND NUMERATION

5.1.1 The student will identify expanded notation from four (4) digit numbers.

Given ten (10), four (4) digit numbers, and four (4) choices for each, the student will select the correct expanded form for each numeral.

Minimum: 9

5.1.2 The student will identify equivalent common fractions.

Given 10 pairs of fractions, one with a missing numerator or denominator, and 4 choices for each, the student will select the correct numerator or denominator which makes the fractions equivalent.

Minimum: 9

5.1.3 The student will reduce fractions to lowest terms.

Given 10 fractions and 4 choices for each, the student will select the equivalent fraction in lowest terms.

Minimum: 9

TOPIC 2: OPERATIONS

5.2.1 The student will demonstrate mastery of the multiplication facts through ten times twelve (10 x 12).

Given thirty-five (35) facts, the student will write within two (2) minutes the correct product for each multiplication fact.

Minimum: 34

5.2.2 The student will demonstrate mastery of the division facts through one hundred twenty divided by ten (120 ÷ 10).

Given forty (40) facts, the student will write within two (2) minutes the correct quotient for each division fact.

Minimum: 39

5.2.3 The student will multiply a two (2) digit factor by a one (1) digit factor with regrouping required.

Given ten (10) multiplication problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

5.2.4 The student will multiply two (2), two (2) digit factors with regrouping required.

Given ten (10) multiplication problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

5.2.5 The student will divide a two (2) digit dividend by a one (1) digit divisor with regrouping required.

Given ten (10) division problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

5.2.6 The student will divide a three (3) digit dividend by a one (1) digit divisor with regrouping required.

Given ten (10) division problems and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

5.2.7 The student will divide a three (3) or four (4) digit dividend by a two (2) digit divisor with regrouping required.

Given ten (10) division problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

5.2.8 The student will add two (2) like proper fractions having a sum which is less than one (1) and reduce the sum to lowest terms.

Given ten (10) addition problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

5.2.9 The student will add two (2) mixed fractions with no regrouping required and reduce the sum to lowest terms.

Given ten (10) addition problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

5.2.10 The student will subtract two (2) mixed fractions with no regrouping required and reduce the sum to lowest terms.

Given ten (10) subtraction problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

5.2.11 The student will identify properties of whole numbers.

Given ten (10) equations, and five (5) names of properties, the student will match the correct name with the correct equation.

Minimum: 9

TOPIC 3: MEASUREMENT, GEOMETRY, AND RELATIONS

5.3.1 The student will add and subtract money with regrouping required.

Given ten (10) addition and subtraction problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

5.3.2 The student will identify time notation in hours, minutes and seconds.

Given ten (10) pictured clocks with settings on hours, minutes, and seconds, and four (4) choices for each, the student will select the correct time notation for each setting.

Minimum: 9

5.3.3 The student will identify equivalent linear measures for inches, feet, yards, and miles.

Given ten (10) linear measures, and four (4) choices for each, the student will select the correct equivalent measure.

Minimum: 9

5.3.4 The student will identify equivalent linear measures in millimeters, centimeters, meters, and kilometers. (Metric)

Given ten (10) linear measures, and four (4) choices for each, the student will select the correct equivalent measure.

Minimum: 9

5.3.5 The student will identify equivalent weight measures in ounces, pounds, and fractional pounds.

Given ten (10) weight units, and four (4) choices for each, the student will select the correct equivalent measures.

Minimum: 9

5.3.6 The student will identify equivalent liquid measures in cups, pints, quarts, and gallons.

Given ten (10) liquid measure units, and four (4) choices for each, the student will select the correct equivalent measures.

Minimum: 9

5.3.7 The student will identify equivalent liquid measures in milliliters, liters, and kiloliters. (Metric)

Given ten (10) liquid measure units, and four (4) choices for each, the student will select the correct equivalent measure.

Minimum: 9

5.3.8 The student will compute the perimeters of polygons, (U.S. Standard - Metric)

Given ten (10) drawings of polygons with the length of the signs labeled, and four (4) choices for each, the student will select the correct perimeter for each polygon.

Minimum: 9

TOPIC 4: PROBLEM SOLVING

5.4.1 The student will identify the facts and operations required to solve two (2) step word problems.

Given ten (10), two (2) step word problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

5.4.2 The student will estimate the solution for two (2) step word problems, and four (4) choices for each, the student will estimate and select the correct answer for each problem.

Minimum: 9

5.4.3 The student will solve two (2) word problems.

Given ten (10), two(2) step word problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

TOPIC 5: TOOLS AND RELATIONS

5.5.1 The student will interpret picture graphs.

Given one (1) picture graph, five (5) questions, and four (4) choices for each, the student will select the correct answer for each question.

Minimum: 5

LEVEL 6

6.1.1 The student will associate numerals with number names to ten millions.

Given ten (10) number names, and four (4) choices for each, the student will select the correct numeral for each number name.

Minimum: 9

6.1.2 The student will compare common fractions.

Given ten (10) pairs of fractions, the student will select the fraction which has the greater value in each pair.

Minimum: 9

6.1.3 The student will identify the least common denominator for fractions.

Given ten (10) pairs of fractions, and four (4) choices for each, the student will select the correct least common denominator for each pair.

Minimum: 9

6.1.4 The student will change improper fractions to mixed fractions.

Given ten (10) improper fractions, and four (4) choices for each, the student will select the correct mixed fraction for each improper fraction.

Minimum: 9

6.1.5 The student will change mixed fractions to improper fractions.

Given ten (10) mixed fractions, and four (4) choices for each, the student will select the correct improper fraction for each mixed fraction.

Minimum: 9

6.1.6 The student will identify numerals to millions in exponential notation.

Given five (5) numerals to millions, and four (4) choices for each, the student will select the correct notation for each numeral.

Minimum: 4

6.

TOPIC 2: OPERATIONS

6.2.1 The student will add five (5), five (5) or more digit addends with regrouping required.

Given ten (10) addition problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

6.2.2 The student will subtract a five (5) digit subtrahend from a five (5) digit minuend with regrouping required.

Given ten (10) subtraction problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

6.2.3 The student will multiply two (2), three (3) digit factors with regrouping required.

Given ten (10) multiplication problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

6.2.4 The student will divide a three (3) or more digit dividend by a two (2) digit divisor, and express the remainder as a fraction in lowest terms.

Given ten (10) division problems, and four (4) choices for each, the student will compute and select the correct remainder for each problem.

Minimum: 9

6.2.5 The student will add two (2) proper fractions having a sum which is greater than one (1), change the sum to a mixed fraction or whole number and reduce to lowest terms.

Given ten (10) addition problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

6.2.6 The student will add two (2) like mixed fractions with regrouping required and reduce the sum to lowest terms.

Given ten (10) addition problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

6.2.7 The student will subtract like mixed fractions with regrouping required and reduce the difference to lowest terms.

Given ten (10) subtraction problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

6.2.8 The student will add two (2) proper unlike fractions and reduce the sum to lowest terms.

Given ten (10) addition problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

6.2.9 The student will subtract two (2) proper unlike fractions and reduce the difference to lowest terms.

Given ten (10) subtraction problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

6.2.10 The student will add two (2) unlike mixed fractions and reduce the sum to lowest terms.

Given (10) addition problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

6.2.11 The student will subtract two (2) unlike mixed fractions with regrouping required and reduce the difference to lowest terms.

Given ten (10) subtraction problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

6.2.12 The student will multiply a whole number by a fraction and reduce the product to lowest terms.

Given ten (10) multiplication problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

6.2.13 The student will multiply two (2) proper fractions and reduce the product to lowest terms.

Given ten (10) multiplication problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

TOPIC 3: MEASUREMENT, GEOMETRY, AND RELATIONS

6.3.1 The student will multiply money units with regrouping required.

Given ten (10) multiplication problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

6.3.2 The student will add and subtract time units in seconds, minutes, hours, days, weeks, months and years, with regrouping required.

Given ten (10) addition and subtraction problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

6.3.3 The student will interpret and dimension scale drawing.

Given a scale drawing (1" = 6') with seven (7) unknown dimensions, a twelve inch (12") ruler, and four (4) choices for each dimension, the student will measure the line and select the correct answer for each dimension.

Minimum: 6

6.3.4 The student will add and subtract linear measure in inches, feet, yards, and miles with regrouping required.

Given ten (10) addition and subtraction problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

6.3.5 The student will add and subtract linear measures in millimeters, centimeters, meters, and kilometers with regrouping required.

Given ten (10) addition and subtraction problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

6.3.6 The student will read a combination Fahrenheit-Celsius (centigrade) thermometer.

Given five (5) pictured Fahrenheit-Celsius thermometers, and four (4) choices for each, the student will select the correct reading for each thermometer.

Minimum: 5

6.3.7 The student will identify equivalent weight measures in pounds, tons, and fractions of tons.

Given ten (10) weight units, and four (4) choices for each, the student will select the correct equivalent weight measure.

Minimum: 9

6.3.8 The student will add and subtract weight measures in ounces, pounds, and tons with regrouping required.

Given ten (10) addition and subtraction problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

6.3.9 The student will add and subtract weight measures in grams and kilograms with regrouping required. (Metric)

Given ten (10) addition and subtraction problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

6.3.10 The student will add and subtract liquid measures in cups, pints, quarts and gallons with regrouping required.

Given ten (10) addition and subtraction problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

6.3.11 The student will add and subtract liquid measures in milliliters, liters, and kiloliters with regrouping required. (Metric)

Given ten (10) addition and subtraction problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

6.3.12 The student will compute the perimeter of parallelograms. (U.S. Standard - Metric)

Given ten (10) drawings of parallelograms with the length of the sides labeled, and four (4) choices for each, the student will select the correct perimeter for each parallelogram.

Minimum: 9

TOPIC 4: PROBLEM SOLVING

6.4.1 The student will identify the facts and operations required to solve two (2) step word problems.

Given ten (10), two (2) step word problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

6.4.2 The student will estimate the solution for two (2) step word problems.

Given ten (10), two (2) step word problems and four (4) choices for each, the student will estimate and select the correct answer for each problem.

Minimum: 9

6.4.3 The student will solve two (2) step word problems.

Given ten (10), two (2) step word problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

TOPIC 5: TOOLS AND RELATIONS

6.5.1 The student will interpret simple bar graphs.

Given one (1) simple bar graph, five (5) questions, and four (4) choices for each, the student will select the correct answer for each question.

Minimum: 5

LEVEL 7

TOPIC 1: NUMBER AND NUMERATION

7.1.1 The student will identify equivalent common fractions and decimals.

Given ten (10) fractions or decimals, and four (4) choices for each, the student will select the correct fraction for each decimal and the correct decimal for each fraction.

Minimum: 9

7.1.2 The student will change a common fraction to a decimal.

Given ten (10) common fractions, and four (4) choices for each, the student will select the correct decimal for each fraction.

Minimum: 9

7.1.3 The student will associate decimal numerals with the number names. (decimals to thousandths)

Given ten (10) number names, and four (4) choices for each, the student will select the decimal for each number name.

Minimum: 9

7.1.4 The student will round off whole numbers to millions.

Given ten (10) whole numbers, and four (4) choices for each, the student will select the correct answer for each whole number.

Minimum: 9

7.1.5 The student will round off decimals to tenths and hundredths (10ths - 100ths).

Given ten (10) decimals, and four (4) choices for each, the student will select the correct answer for each decimal.

Minimum: 9

TOPIC 2: OPERATIONS

7.2.1 The student will divide a three (3) or more digit dividend by a three (3) digit divisor and express the remainder as a fraction in lowest terms.

Given ten (10) division problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

7.2.2 The student will multiply two (2) mixed fractions and reduce the product to lowest terms.

Given ten (10) multiplication problems and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

7.2.3 The student will divide a whole number by a fraction and reduce the quotient to lowest terms.

Given ten (10) division problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

7.2.4 The student will divide a fraction by a whole number and reduce the quotient to lowest terms.

Given ten (10) division problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

7.2.5 The student will divide two (2) proper fractions and reduce the quotient to lowest terms.

Given ten (10) division problems, and four (4) choices for each, The student will compute and select the correct answer for each problem.

Minimum: 9

7.2.6 The student will divide two (2) mixed numbers and express the quotient in lowest terms.

Given ten (10) division problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

7.2.7 The student will add and subtract mixed decimals to hundredths (100th's) and express the sum or difference in correct decimal form.

Given ten (10) addition and subtraction problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

7.2.8 The student will multiply two (2) decimals and express the product in correct decimal form.

Given ten (10) multiplication problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

7.2.9 The student will divide a mixed decimal by a whole number and express the quotient in correct decimal form.

Given ten (10) division problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

7.2.10 The student will divide a whole number by a decimal and express the quotient as a whole number.

Given ten (10) division problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

7.2.11 The student will divide a four (4) digit decimal by a two (2) digit decimal and express the quotient in correct decimal form.

Given ten (10) division problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

7.2.12 The student will divide a three (3) or four (4) digit whole number by a two (2) digit whole number and express the remainder in correct decimal form.

Given ten (10) division problems, and four (4) choices for each, the student will compute and select the correct remainder for each problem.

Minimum: 9

7.2.13 The student will add integers.

Given ten (10) addition problems of integers, a number line, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

TOPIC 3: MEASUREMENT, GEOMETRY, AND RELATIONS

7.3.1 The student will divide money with regrouping required.

Given ten (10) division problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

7.3.2 The student will identify equivalent liquid measures in teaspoons, tablespoons, ounces, cups, pints, quarts, and gallons.

Given ten (10) liquid measure units, and four (4) choices for each, the student will select the correct equivalent measure.

Minimum: 9

7.3.3 The student will identify lines, line segments, rays, and angles.

Given ten (10) names of one space geometric shapes, and ten (10) geometric drawings, the student will match the correct drawing with each geometric name.

Minimum: 9

7.3.4 The student will compute the areas of squares, rectangles, circles, and triangles. (U.S. Standard - Metric)

Given ten (10) drawings of plane (2D) geometric shapes, the measurements of each, and four (4) choices for each, the student will select the correct area for each shape.

Minimum: 9

7.3.5 The student will compute the circumference of a circle. (U.S. Standard - Metric)

Given ten (10) drawings of circles with diameter or radius labeled, and four (4) choices for each, the student will select the correct circumference for each circle.

Minimum: 9

TOPIC 4: PROBLEM SOLVING

7.4.1 The student will identify the facts and operations required to solve two (2) step word problems.

Given ten (10), two (2) step word problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

7.4.2 The student will estimate the solution for two (2) step word problems.

Given ten (10) word problems, and four (4) choices for each, the student will select the correct estimation for each problem.

Minimum: 9

7.4.3 The student will solve two (2) step word problems.

Given ten (10), two (2) step word problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

TOPIC 5: TOOLS AND RELATIONS

7.5.1 The student will interpret compound bar graphs.

Given one (1) compound bar graph, five (5) questions, and four (4) choices for each, the student will select the correct answer for each question.

Minimum: 5

7.5.2 The student will find the mean (average) of a series of numbers.

Given five (5) series of numbers, and four (4) choices for each, the student will select the correct average for each series.

Minimum: 5

LEVEL 8

TOPIC 1: NUMBER AND NUMERATION

8.1.1 The student will identify equivalent decimals and percents.

Given ten (10) percents or decimals, and four (4) choices for each, the student will select the correct decimal for each percent and the correct percent for each decimal.

Minimum: 9

8.1.2 The student will change percents to common fractions or mixed numbers.

Given ten (10) percents, and four (4) choices for each, the student will select the correct common fraction or mixed number for each percent.

Minimum: 9

8.1.3 The student will change common fractions or mixed numbers to percents.

Given ten (10) mixed numbers or common fractions, and four (4) choices for each, the student will select the correct percent for each common fraction or mixed number.

Minimum: 9

TOPIC 2: OPERATIONS

8.2.1 The student will find the percent of a given number.

Given ten (10) percent problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

[illegible].2.2 The student will determine the number when the percent and rate are given.

Given ten (10) percent problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

Minimum: 9

8.2.3 The student will determine what percent one number is of another.

Given ten (10) percent problems, and four (4) choices for each, the student will compute and select the correct answer for each problem.

TOPIC 3: MEASUREMENT, GEOMETRY, AND RELATIONS

8.3.1 The student will identify time units in years, decades, and centuries.

Given ten (10) time elements in years, centuries, decades, and ten (10) choices, the student will match equivalent time elements.

Minimum: 9

8.3.2 The student will identify time differences in the seven (7) time zones of the United States.

Given a map of the seven (7) time zones with designated cities, the names of ten (10) cities, and four (4) choices for each, the student will select the correct time for each city.

Minimum: 9

8.3.3 The student will identify pictured plane (2D) and solid (3D) geometric shapes.

Given ten (10) names of plane (2D) and solid (3D) geometric shapes, and ten (10) geometric drawings, the student will select the correct drawing for each geometric name.

Minimum: 9

8.3.4 The student will compute the volume of solid geometric shapes.

Given ten (10) measurements of solid geometric shapes, and four (4) choices for each, the student will select the correct volume for each problem.

Minimum: 9

TOPIC 4: PROBLEM SOLVING

8.4.1 The student will identify the facts and operations required to solve two (2) step word problems.

Given ten (10), two (2) step word problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

8.4.2 The student will estimate the solution for two (2) step word problems.

Given ten (10), two (2) step word problems, and four (4) choices for each, the student will estimate and select the correct answer for each problem.

Minimum: 9

8.4.3 The student will solve two (2) step word problems.

Given ten (10), two (2) step word problems, and four (4) choices for each, the student will select the correct answer for each problem.

Minimum: 9

TOPIC 5: TOOLS AND RELATIONS

8.5.1 The student will interpret simple line graphs.

Given one (1) simple line graph, five (5) questions, and four (4) choices for each, the student will select the correct answer for each question.

Minimum: 5

8.5.2 The student will interpret compound line graphs.

Given one (1) compound line graph, five (5) questions, and four (4) choices for each, the student will select the correct answer for each question.

Minimum: 5

8.5.3 The student will interpret circle graphs.

Given one (1) circle graph, five (5) questions, and four (4) choices for each, the student will select the correct answer for each question.

Minimum: 5

INSTRUCTIONAL STRATEGIES

ARITHMETIC DOMAIN

Lesson Plan

Scope

This lesson plan is developed in order to extend the student's understanding of the division algorithm when a two (2)-digit dividend is divided by a one (1)-digit divisor and there is a non-zero remainder.

Objective 4.2.10

Given ten (10) division problems and four (4) choices for each, the student will compute and select the correct answer for each problem.

Initial Presentation

"Today I would like for you to add three important new words to the list of Math Skills Terms in your notebook." (Using the overhead projector for large print students and a braille worksheet for others, the teacher introduces these words):

remainder divisible multiple

"Divisible and multiple suggest the operations of arithmetic."

"What are these operations?" (use overhead)

$2 \times 6 = 12$ $12 \div 2 = 6$

(In the meantime distribute a set of fourteen (14) counters to each student and introduce the concept of remainder.)

"How many sets of three (3) are in a set of fourteen (14)?"

When the student points out that he has two (2) counters left, indicate that two (2) names the remainder.

Reinforce this concept by having some students come to the front of the room. Then ask all but one or two to sit down.

"These students are remaining in front of the room. They are the remainder when the rest of the set have returned to their seats."

Next demonstrate the relationship between taking objects away and subtraction and between separating sets and division which is the process of repeated subtraction.

Use equations such as:

(a) $14 - 3 - 3 - 3 - 3 = n$

$14 - C\ (4 \times 3) = n$

$14 - 12 = n$

$2 = n$

(b)
$$\begin{array}{r} 12 \\ \underline{-5} \\ 7 \\ \underline{-5} \\ 2 \end{array}$$

What is the remainder when you divide 12 by 7? By 8? By 9?

Divisible - means capable of being divided.

Multiple - is the product of a quantity like ⟨35 is a ~ of 7⟩.

Remainder - is the final undivided part after division that is less than the divisor of the number left after subtraction.

Twelve (12) is divisible by 2, 3, 4, and 6 because the remainder is 0. Is it also divisible by one (1) and twelve (12)? If 0 is the remainder, a number is divisible by another number. Is 10 divisible by 2? By 5? By 3? Even numbers like 2, 4, 6, 8 are multiples of 2 because they are divisible by 2. Odd numbers like 1, 3, 5, 7 are not divisible by 2. All right. To find the quotient of 13 ÷ 2 = n, use this procedure.

First, divide. You think:

Thirteen (13) is not a multiple of 2 but 12 is. Twelve is the multiple of 2 less than and closest to 13 that is divisible by 2. (Demonstrate the following example on the overhead and use a braille worksheet explanation too.)

(a)

$$\begin{array}{r l} & 6 \text{ r1} \\ 2 & \overline{)\,13} \\ & \underline{12} \\ & 1 \end{array}$$

Multiply: (2 x 6) write the product underneath the dividend (13). Draw a line beneath the 12 to indicate that division is finished.

Subtract: 13 - 12 = 1
Write one (1) beneath the line. The quotient is 6, remainder 1.

Two is contained in 13 six times and the remainder is 1. (Allow time for discussion and review of the process of dividing a two-digit dividend by a one-digit divisor with a one-digit quotient and a remainder.)

Discuss which of the following numbers are divisible by 2:

3, 5, 8, 7 18, 15, 14, 9

(The above numbers appear in oral discussion in the text, ARITHMETIC 4, Laidlaw, 1963.) Ask volunteers to work the following algorithms on the chalkboard.

$12 \div 2 = n$ $14 \div 2 = n$ $19 \div 5 = n$

Instruction and Practice

You know that a good detective depends upon clues to help him solve important cases. You may want to use a clue at the top of your paper to help you solve your problems. Suppose we write these capital letters DMS in the upper left hand corner of your practice papers before writing your name or the date. O.K.? These letters will provide clues to the steps in working a division problem. Of course you understand the D is for divide, M for multiply and S for subtract. These letters provide clues to the steps in working your division problems.

Assign worksheets which follow for practice. The student will continue solving problems using divisors through 9 and non zero remainders. Extensions will include writing multiples of even numbers, solving one step story problems and using the numberline.

Evaluation

Given ten (10) division problems, out of four (4) choices for each, the student will compute and select the correct answer for each problem.

Instruction and Practice
(Supplement for Adaption for braille student):

The braille student will use the Cranmer abacus for recording the product in the second step of a division problem.

For example:

$$\begin{array}{rl} & \;\;2 \text{ r1} \\ 6 & \overline{)13} \\ & \;\underline{12} \\ & \;\;\;1 \end{array}$$

The student will write the problem. Divide 6 into 13. He will then write the 2 above the three ones in the quotient. Next he will record the multiplication step on the abacus (6 x 2 = 12). He will mentally subtract the dividend minus the product of the divisor times the quotient (6 x 2 = 12), (13 - 12 = 1). He will record r1 after the 2 in the quotient. Next he will proceed to write the product, 12, beneath the dividend, roll one space down, draw a line for subtraction and bring down the one. This procedure is especially helpful as an aid for the student in keeping the correct place value in longer division problems. (It is important for the teacher to help the student to keep mistakes at a minimum because the braille system does not allow for error.)

Generalization and Transfer

There are many situations where the public must use division in its daily activities. A teacher must be able to divide equitably when giving grades to a class. A parent divides equally among his children. Children divide treats among friends. In business a grocer or merchant must price goods accurately.

Being "fair and square" is a trait people honor and revere. In order to do so, one must be able to compute division facts quickly and accurately. And if one cannot he/she might be cheated out of money or other valuables. So students should work hard on this division process in order to be proficient at it. This is a very important segment of education in mathematics.

DM8

Worksheet

$$\begin{array}{r} 1\text{ r}1 \\ 2\overline{)\,3} \\ \underline{2} \\ 1 \end{array}$$

$2\overline{)\,5}$ $2\overline{)\,7}$ $2\overline{)\,9}$

$2\overline{)\,11}$ $2\overline{)\,13}$ $2\overline{)\,15}$ $2\overline{)\,17}$

$2\overline{)\,14}$ $2\overline{)\,16}$ $2\overline{)\,19}$ $2\overline{)\,12}$

180

Name ______________________________
19

Date ______________
199

o DMS

Worksheet

$6\overline{)44}$ $3\overline{)19}$ $4\overline{)26}$ $5\overline{)21}$

$9\overline{)57}$ $8\overline{)50}$ $5\overline{)39}$ $9\overline{)65}$

$6\overline{)35}$ $7\overline{)47}$ $8\overline{)59}$ $6\overline{)55}$

Name ______________________________

Date ____________________

Worksheet

1. Terry paid 60¢ for 6 caramel apples. How much did each apple cost?

2. Ann has 36 pieces of candy. She wants to share the candy among 5 girls, giving each girl the same number of pieces. How many pieces would each girl receive?

3. Paul wants to make some shelves 3 feet long. How many shelves can he cut from a board 16 feet long?

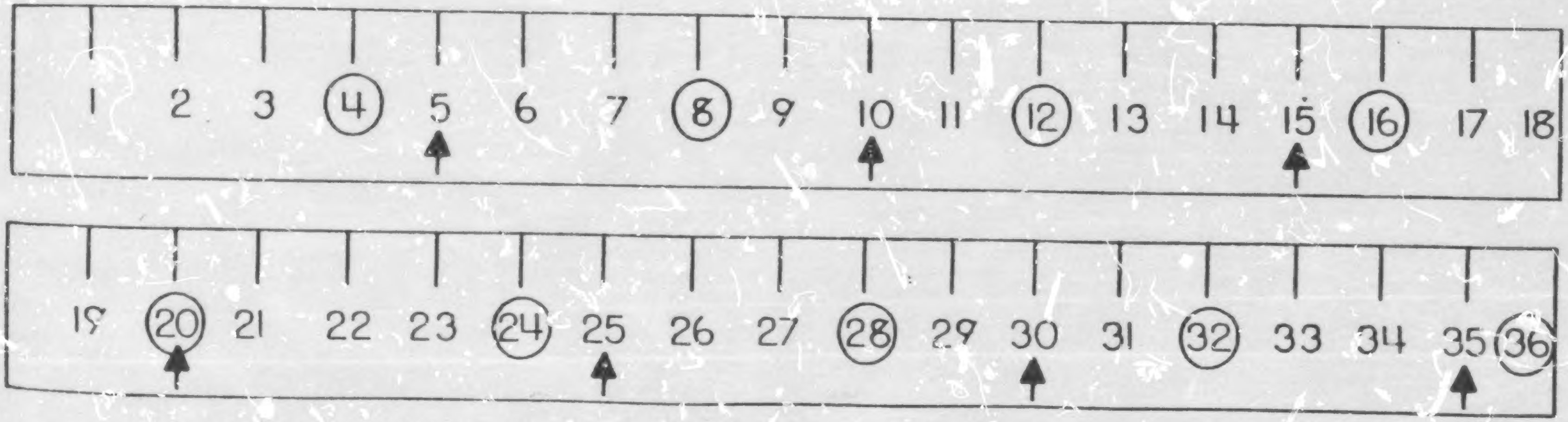
4. John has 15 apples. He eats 2 each day. How many days will they last, and how many will be left?

1. [illegible]9 ÷ 3 = n   5 ÷ 3 = n
2. 10 ÷ 3 = n   8 ÷ 3 = n
3. 4 ÷ 3 = n   25 ÷ 3 = n
4. 26 ÷ 3 = n   23 ÷ 3 = n
5. 17 ÷ 3 = n   20 ÷ 3 = n

$\overline{)}$. Find the quotient and remainder in each one.

A quick review

	a	*b*	*c*	*d*
1.	$4\overline{)16}$	$4\overline{)32}$	$4\overline{)8}$	$4\overline{)12}$
2.	$4\overline{)4}$	$4\overline{)24}$	$4\overline{)16}$	$4\overline{)20}$
3.	$5\overline{)25}$	$5\overline{)5}$	$5\overline{)20}$	$5\overline{)10}$


1
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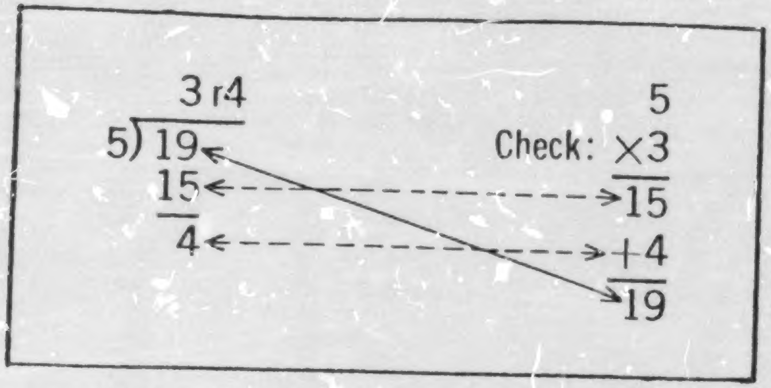
36

A Remainder Other Than Zero—Divisors of 4 or 5

In the picture above the numerals with circles around them name multiples of 4. They are divisible by 4. How are the multiples of 5 shown?

You can use multiplication and addition to check division. The equation 19÷5=n and its check are shown below.



In the check, multiply the divisor by the quotient and add the remainder to the product.

Oral Tell the number smaller than, but closest to, the dividend that is divisible by the divisor.

	a	b	c	d
1.	4)25	4)22	4)18	4)26
2.	4)33	4)21	4)35	4)37
3.	4)29	4)15	4)38	4)39
4.	4)7	4)9	4)10	4)11
5.	4)13	4)27	4)23	4)17
6.	4)19	4)34	4)14	4)30
7.	5)29	5)32	5)19	5)23
8.	5)21	5)16	5)37	5)44

Written Copy each division in rows 1 through 8 above. Find each answer. Check by using multiplication and addition.

A quick review

	a	b	c	d
1.	6)42	6)54	6)24	6)48
2.	6)36	6)18	6)12	6)30
3.	7)42	7)49	7)35	7)21
4.	7)14	7)63	7)28	7)56
5.	8)72	8)48	8)40	8)16

~~DMS~~

Test

Circle the correct quotient.

. 9r2 4r1 7 r6 8 r 7
3)29

2. 4r5 6r3 8r5 7r
6)39

3. 8r6 5r9 9r4 4r9
5)49

4. 8r1 7r7 8r9 9r
7)64

185

5. 8r1 7r7 6r8 8r4
8)63

6. 9r1 7r9 8r11 6r
9)82

7. 9r1 8r1 7r6 5r4
5)41

8. 7r1 8r9 6r2 6r6
7)48

9. 3r2 3r4 2r4 3r1
2)7

10. 7r2 6r2 8r4 3r.
3)20

Name 2·3

Date 209

Lesson Plan

Scope

This lesson plan is designed to increase student's understanding and ability in the multiplication of two digit numbers by a one digit number. It teaches blind and partially blind students the procedure by using the braille writer and/or pencils and paper.

Objective 5.2.3

The student will multiply a 2 digit factor by a one digit factor with regrouping required.

Given 10 multiplication problems and 4 choices for each, the student will compute and select the correct answer for each problem. (minimum 9)

Initial Presentation

Tell the students it is time to work on arithmetic. Remind the children that they should know the multiplication facts (1-12), and that they are skilled in multiplying a one (1) or two (2) digit number by a one (1) digit number. "Today, we are ready to begin to work on the arithmetic skill of multiplying a two (2) digit number by a one (1) digit number with regrouping required." Guide students to realize that multiplication is a more efficient method of finding sums of equal addends than column addition. (e.g., 3 x 25 = 75 is a faster and more efficient method than 25 + 25 + 25 = 75.) Remind the students that the number to be multiplied is called the multiplicand. The number you multiply by is called the multiplier. The number obtained by multiplying is called the product. When two or more numbers are to be multiplied, each of them is called a factor. The multiplicand and the multiplier are actually names of factors.

A major concern of the teacher is arithmetic with blind and visually impaired children is working effectively and simultaneously with each member of a class, when all of them may be working on different grade levels and/or in individual programs. Almost all students will learn the algorithm for multiplying by ones; however, some students may need to use a multiplication chart. Tell students that they are going to review the multiplication facts, and remind them that those who need to may use the multiplication chart (braille and/or large print). Provide charts for those who ask for them. (See chart.)

"Now we are ready to work on our new skill." Tell students to get out their writing materials (braille writers and/or pencils and paper). Read and explain the objective, including the mastery criteria, to the students. Have the students copy the objective from dictation, and tell them to keep it in their notebook. Emphasize that they are going to learn to multiply a two (2) digit factor by a one (1) digit factor with regrouping required.

In introducing regrouping in multiplication to students, tell them that the same mechanical process used in regrouping in addition also applies here. The student familiar with regrouping procedures seldom has difficulty transferring to multiplication from addition. A single multiplier is used to multiply the two (2) numerals in the multiplicand. Progression is from right to left as with addition and subtraction. Regrouped numerals are added to multiplication answers and are included as part of the total answer. Suppose the answers in regrouped numerals are greater than 9, as when you multiply 3 x 4 or 30 x 4. Then you will make changes in form.

State the two (2) methods pertaining to multiplying a two (2) digit factor by a one (1) digit factor. Suppose you want to solve the problem using the equation method, 3 x 32 = n. Rename the factor 32 as a sum of tens and ones, that is, 3 tens + 2 ones, or 30 + 2. Then the partial products are easy to find. 3 x 32 = n becomes 3 x(30+2)=n. This means that the 30 (3 tens) is to be multiplied by 3, and also the 2 (2 ones) is to be multiplied by 3. These multiplications give the partial products and you merely add them to get the product. Tell students to study the equation. Now try the same multiplication problem by using the 3-step method. Explain spacing to students in the 3-step method. This is especially difficult for braille students, since they have to estimate the number of spaces needed and use backspacing on the braille writer.

3-Step Method

3x2 ones = 6 ones	32 Means 30 + 2
3x3 tens = 9 tens	x 3
Add	6 Partial Product
	90 Partial Product
	96 Product

Tell the students to study the 3-step method. Ask students to explain spacing to you. Then tell the students to get their arithmetic books (braille and/or large print), and study the equation and 3-step methods. Ask students to explain each method to you. Reinforce students' responses and attending behavior.

MULTIPLICATION CHART

X	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

MULTIPLICATION CHART

X	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

Instruction and Practice

Provide the students with a practice session. Usually the time allowed for a braille student should be double or triple that for a print student. There will be variations of this rule depending on the students. The teacher should use his or her own judgment. However, due to the difficulty of lining up problems in braille, it takes the braille student more time than the print student. The students are given several problems to read and compute. Have children read and compute problems using regrouping. While students are working with each method, check with each one individually to see if they are having difficulty, and provide them with corrective feedback. Call attention to what regrouping means, and remind students a single multiplier is used to multiply all the numerals in the multiplicand. Remind students that progression is from right to left as with addition and subtraction. After students have completed this activity, provide them with a practice session orally explaining to you using the same problems. As they complete this practice session, review the correct answers. Let the students use model equation and model 3-step methods during the initial practice sessions. (Approximate practice time five, fifty-five minute periods).

Provide another practice session to multiply a two (2) digit factor by a one (1) digit factor with regrouping. Feedback procedures should be given as described previously. Provide as many practice sessions as are needed as described above, but gradually remove models. Review the steps to follow and the spacing procedures with students before each practice session. Continue to provide knowledge of appropriate results and reinforcement.

Oral and written recitation activities must be incorporated into instruction and practice. The activities should include the equation method and the 30step method using the text (braille and/or large print), and oral explanations and questions. Students should be asked to write and explain multiplying a two (2) digit factor by a one (1) digit factor with regrouping required. No sample method or help can be used during this recitation. Continue to provide corrective feedback and reinforcement during recitation. Students should complete all the oral and written exercises, including the Self-Evaluation, in the text. Tell the students this is necessary to become proficient in this skill.

Sample Practice

Find the value of n in each of the following equations by using the equation method.

1. 2 x 32 = n   2. 3 x 23 = n   3. 2 x 37 = n
4. 4 x 19 = n   5. 5 x 13 = n   6. 6 x 15 = n
7. 4 x 24 = n   8. 7 x 63 = n

Use the same problems to name the products using the 3-Step Method.

1. 32   2. 23   3. 37   4. 19   5. 13
x2   x3   x2   x4   x5

6. 15   7. 24   8. 63
x6   x4   x7

Evaluation

The initial presentation and instruction and practice activities described above will probably take two to three weeks to complete (one period 55 minutes a day every day). When the students are completing the activities with few errors, you should begin to evaluate your objective. Your evaluation should take one class period (55 minutes). Permit the students, especially the braille students, to use the abacus in computation if they desire; however, the answer must be written in braille or large print. The evaluation will consist of 10 multiplication problems and 4 choices for each, and the student will compute and select the correct answer for each problem. Written instructions (braille and/or large print) will be provided for students.

Sample Test

Directions: Here are 10 multiplication problems with 4 choices for each, compute and select the correct answer for each problem. Write your answer on a separate sheet of paper.

1. 43 x 5
    a. 215
    b. 251
    c. 125
    d. 2015
2. 33 x 2
    a. 56
    b. 36
    c. 66
    d. 63
3. 56 x 3
    a. 160
    b. 168
    c. 618
    d. 681
4. 51 x 4
    a. 204
    b. 240
    c. 24
    d. 201
5. 48 x 6
    a. 298
    b. 338
    c. 288
    d. 248
6. 77 x 6
    a. 462
    b. 426
    c. 624
    d. 4242
7. 27 x 5
    a. 125
    b. 153
    c. 135
    d. 315
8. 52 x 8
    a. 316
    b. 406
    c. 260
    d. 416
9. 93 x 8
    a. 724
    b. 744
    c. 814
    d. 7044
10. 86 x 9
    a. 794
    b. 763
    c. 736
    d. 774

Lesson Plan

Scope

The following lesson plan teaches computation of perimeter of a parallelogram.

Objective 6.3 12

Given ten (10) drawings of parallelograms with the length of sides labeled, and four (4) choices for each, student will select correct perimeter for each.

Initial Presentation

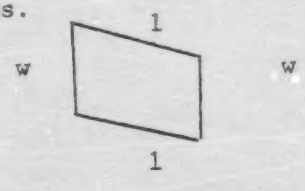
Define a parallelogram as a quadrilateral whose opposite sides are parallel in pairs. It is assumed that the students have a knowledge of the terms quadrilateral and parallel. Point out that parallelograms include rectangles and squares, the most common parallelograms.

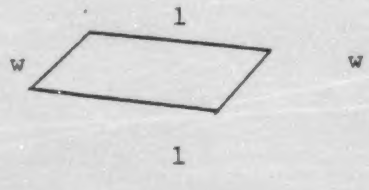
Let the students handle parallelograms several days before the actual lesson is to be taught. Discuss objects in the classroom and outside the classroom that have the shape of a parallelogram. Encourage students to bring examples to class.

On the day of the introduction of the lesson explain the objective to the class, including the mastery criteria.

Present each student with a drawing of two parallelograms. Blind students would use raised line figures made by the teacher or the Graphic Aid for Mathematics available from the American Printing House. Partially sighted students would use large block hand-drawn figures.

Examples:

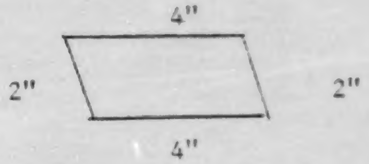


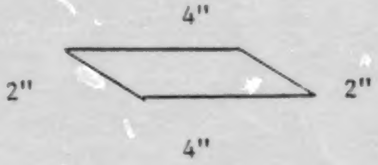


Each student will touch the lines marked "l" as the teacher explains that the "l" stand for length. The same process would be repeated for the line marked "w" which stands for width. The same procedure would be repeated as many times as necessary to assure the students' understanding of length and width of a parallelogram.

Numbers would next be substituted for the "l" and "w" on each parallelogram. Make sure that each student has his own individual examples.

Examples:





Let each student orally give the number that represents the length and width of the parallelogram. Demonstrate to the students that if they add all four numbers representing the sides of the parallelogram, they will have found the perimeter. Give several students the opportunity to explain how to find the perimeter by adding all four sides.

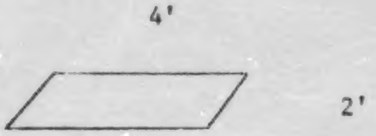
Present the students with the formula $P = 2 (l+w)$ in both large print and braille. Explain the meaning of the formula and that it is a short cut for obtaining perimeter. Encourage the students to memorize the formula as it will save time in working problems later. With the help of the students, use the formula to find the perimeter of several parallelograms. Reinforce students' responses.

Instruction and Practice

Provide each partially sighted student with large print worksheets of parallelograms with the length and width given. Blind students would be given raised line figures with numbers written in braille. Allow students to use the formula for finding perimeter. Problems should be checked individually as each student completes one. (See Worksheet #1.)

A practice session should also be provided for students involving use of the formula from memory. Provide each student with a worksheet containing parallelograms with length and width given. Students should use the formula to set up an equation and solve it to find the perimeter. (See worksheet #2.)

Example:



$P = 2\ (l+w)$ (Student provides formula)

$P = 2\ (4+2)$

$P = 2\ (6)$

$P = 12'$

Evaluation

The initial presentation and instruction and practice activities will probably take six to seven (6-7) days to complete, with students working approximately forty (40) minutes per day. Students then must write the formula for finding the perimeter of a parallelogram and set up and solve an equation for each parallelogram. After solving each equation students will select one of four choices for each parallelogram. (See Test.)

Generalization and Transfer

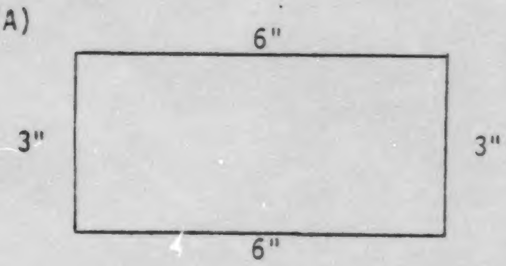
Throughout the lesson emphasis will be placed on the use of perimeter in other situations such as finding the perimeter of a basketball court, football field, or swimming pool. Other examples include finding the dimensions of walls for wallpaper or paint, finding the length of a driveway for paving or finding the dimensions for building a porch.

WORKSHEET #1

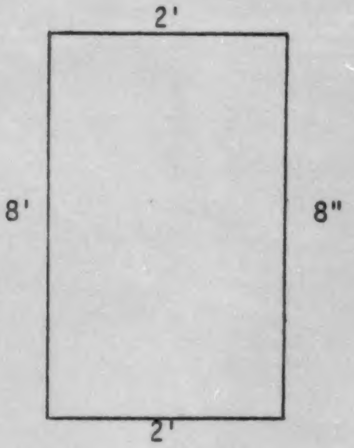
NAME________________________________ DATE____________________

Formula: P = 2 (l + w)

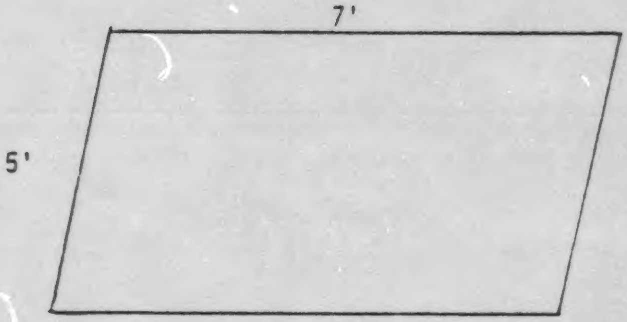
(A)



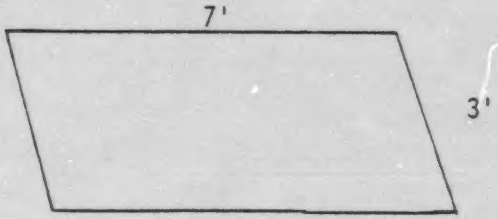
(B)



(C)



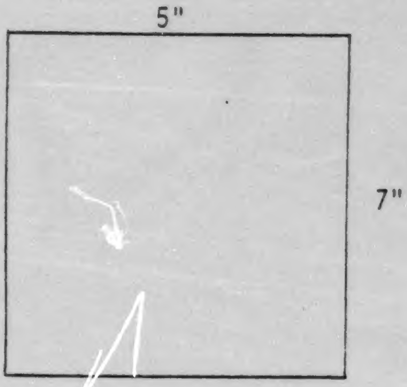
(D)



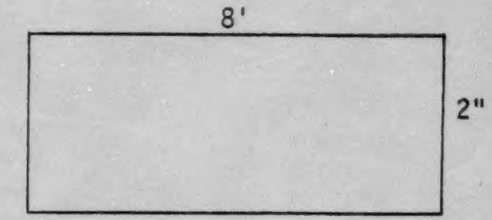
WORKSHEET #2

NAME______________________________ DATE________________

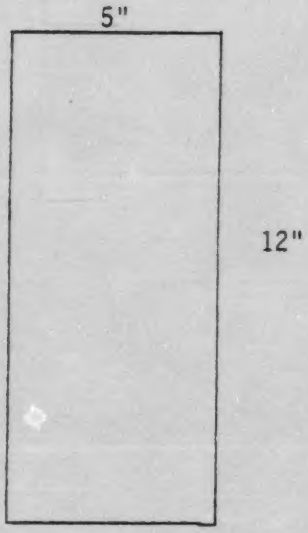
(A)



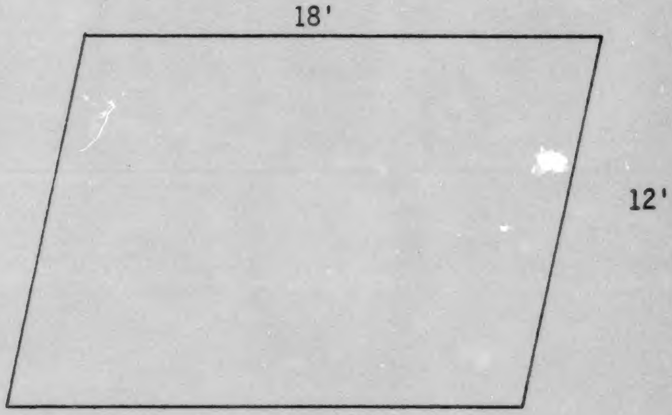
(B)



(C)



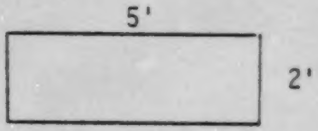
(D)



NAME______________________________ DATE____________________

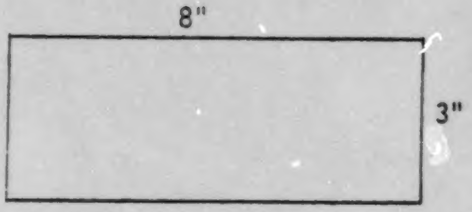
Test - Perimeter of Parallelograms

(1)



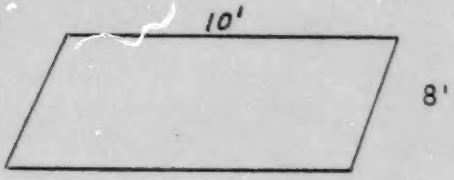
A. 14' C. 7'
B. 14" D.10'

(2)



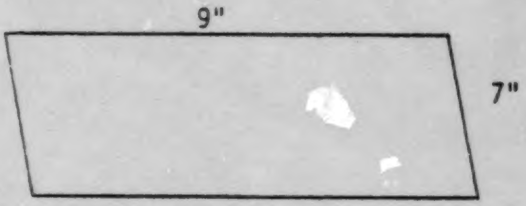
A. 24" C. 20"
B. 22" D. 19"

(3)



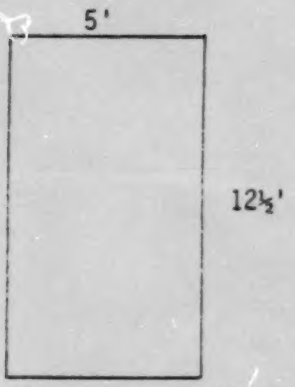
A. 42' C. 36'
B. 31' D. 25'

(4)



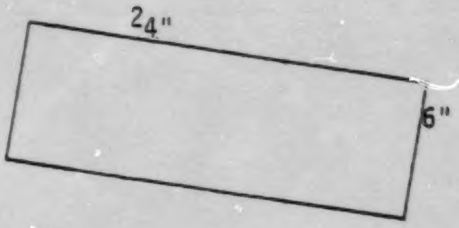
A. 63" C. 18"
B. 32" D. 16"

(5)



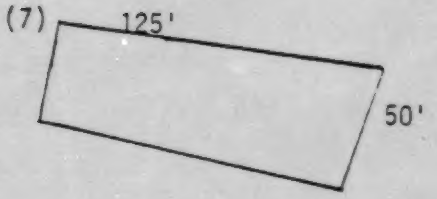
A. 60' C. 60½'
B. 35' D. 17½'

(6)



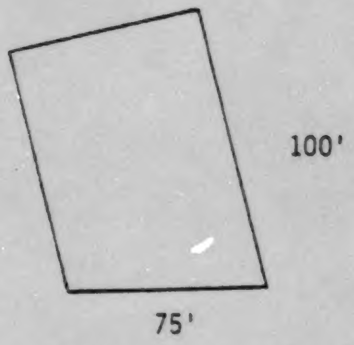
A. 30" C. 144"
B. 48" D. 60"

(7)



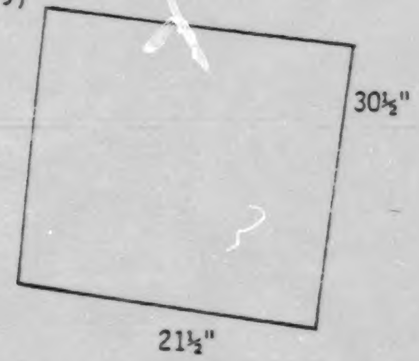
A. 175'
B. 350'
C. 225'
D. 150'

(8)



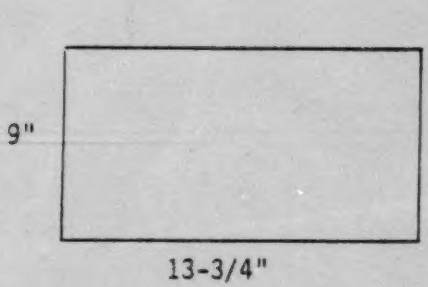
A. 350'
B. 175'
C. 200'
D. 107'

(9)



A. 51"
B. 104"
C. 51½"
D. 105"

(10)



A. 45½"
B. 45-2/2"
C. 22-3/4'
D. 22-3/4"

Lesson Plan

Scope

This lesson is designed to teach arithmetic principles using story problems that deal with real life situations involving only two mathematical steps. It is limited to story problems using two operations to solve the problem.

Objective 7.4.1

Given five (5) story problems whereas two mathematical operations are used to solve the problem, the student will solve the problems with 100% accuracy.

Initial Presentation

Get the students' attention by enthusiastically telling them that it is time to do math. Read and explain the objective. Tell the students that the lesson should be interesting because they are going to work problems that involve real life situations. Ask each student to think of one. Example: Bob went to the store for his mother. He bought a loaf of bread that cost 89¢ and a pound of cheese for $2.69. How much change did he receive from five dollars if the 4% sales tax is included in the price? Tell the students that in order to solve this problem they must remember that two steps are involved. Ask a student to identify the two steps. Jeff says "addition and subtraction". Another student may say what figures to add and what to subtract. The answer is then given. For further understanding, the students may check the examples in the text.

Tell the students that in order to solve word problems there are a few helpful hints and reminders: (a) when you find the sum or total of two or more different numbers, you add; (b) when you have to find the sum of repeatedly adding the same number, you may either add or multiply; (c) when you have to find the difference between two numbers, you subtract; (d) when you have to find how many times one number is contained in another, you divide. The most important thing is deriving the right answer.

Instruction and Practice

Each student will be provided with a braille or large print book and worksheets (see Worksheet #1). Each worksheet will contain several story problems with clear directions as to the number of steps involved before solving them. Example: Study each problem carefully by reading it at least twice. There are only two steps involved in solving them. After you have carefully read them, decide upon the operations to be used and solve each. This will be individual work. While students work to solve the problems, the teacher will walk around the room to provide assistance when needed. Any reference material the students have on hand may be used to help them solve the problems.

After all students have finished, the problems should be solved orally in class to check for clarity. Questions are entertained and corrections made after mistakes are found.

The teacher assigns another group of story problems as homework. These problems are brought in the next day and discussed in the classroom. Reinforce the fact that these are the types of problems that people deal with on a daily basis. At least five sessions should be devoted to story problems.

Evaluation

Activities involved in the initial presentation and instruction and practice activities described prior to this section will probably take several days to complete. Upon completion, a written examination will be given to see how well each student understands story problems involving only two steps. If mastery is not attained, this work should be re-taught at another date in the very near future.

Generalization and Transfer

Instruction throughout the learning process will focus on the importance of the four basic mathematical operations - addition, subtraction, multiplication, and division. The problems are selected to meet varying levels of ability and interest. The problems are related to experiences that the students have had or will encounter in the future.

When it is felt that this task has been mastered by students, ask them to make up original problems and bring them to class. Stress the need for each student to bring in at least two problems. This will, hopefully, show how much understanding has been gained.

For more understanding and practice, the class might pretend that they are one big family and plan to purchase some new items for the home. They must figure out what each person's share will be. Other interesting games or ideas may be used for fun and understanding.

The understanding gained from the two-step problems will be used in most day-to-day situations. These activities would include buying lunch, clothing, personal items, figuring out bank accounts, cooking with recipes, and various other occasions. Students will have to deal with problem solving all of their lives. All activities are designed for high positive transfer.

Name ____________________ Date ____________________

WORKSHEET #1

7.4.1 Story Problems

Read each problem at least twice. Decide which operations to use. There are only two steps needed to solve each. After you have decided what to do, solve each problem below:

1. Mr. Appleby had a balance of $872.31 in his checking account. He paid bills by check as follows: $13.26, $73.50, and $157.59. What was his balance? ____________________

2. Mr. Stevenson bought 300 eggs and put them in cartons containing a dozen eggs. He sold them for 50¢ a dozen. How much did Mr. Stevenson make? ____________________

3. How much change should you receive from a ten-dollar bill after buying two (2) full fare tickets when a full fare ticket costs $1.56?

____

4. Mr. Phillips averaged 975 miles of driving a month. About how far did he drive in 3 years? ____________________

5. Miss Jew received $12 as a birthday present. The next day she spent $2.98 for a doll and $1.20 for a ball. How much money did she have left? ____________________

Lesson Plan

Scope

This lesson plan is designed to teach students the principle of changing percents to common or mixed fractions.

Objective 8.1.2

The student will change percents to common fractions of mixed numbers. Given ten (10) percents, and four choices for each, the student will select the correct common number fraction of mixed number for each percent with 95% accuracy.

Initial Presentation

Explain equivalent, percent, and fraction. Ask a student if he/she would be a different person if someone called him/her by a nickname. Point out that nicknames do not change the person and that we have different names for numerals which mean the same amount.

Steps for changing percents to common or mixed numerals:

1. To change a percent to a common fraction (2 methods)
    a. Make a fraction by writing the given number as the numerator and number 100 as the denominator; then reduce to lowest terms. Ex. 8% = 8/100 = 2/25.
    b. Or, if the common fraction equivalent is known, write the common fraction directly. Ex. 40% = 2/5.
2. If the percent is greater than 100%, the answer is a mixed number. Ex. 130% = 130/100 = 130.

We can change 50% to a common fraction by writing it as a fraction and then reducing it to the lowest terms by dividing the numerator and the denominator by the largest number that can be divided exactly into both:

$$50\% = 50/100 = \frac{50 \div 50}{100 \div 50} = \frac{1}{2}$$

"As you know, in arithmetic language signs take the place of words. For example % is called a percent sign."

Student will rename percents to fractions (50% = ½, 25% = ¼, 75% = 3/4, and 125% = 1¼). Make sure student computes each answer.

The presentation will require practice, oral and written, until concept is understood.

Emphasize that the numerals in percents may represent any whole numbers and are not limited to numbers less than 100.

Instruction and Practice

The activities should include oral and written practice in changing percents to fractions. Review and illustrate steps before each activity and have student explain why certain answers are correct or incorrect, with corrective feedback and reinforcement.

Evaluation

Evaluation will take 10% of each class period following introduction and warm-up until mastery is attained. Make sure student computes each answer.

Generalization and Transfer

Review steps in changing percents to fractions.

Students should be given practice activities after each session for motivation. Some activities could be:

1. Pie games where student must change percents to fractional parts (i.e. student must complete a whole pie before becoming a winner).
2. Timed worksheet drills to improve rate of response.
3. Challenge matches where two students try to stump each other.

Students should be able to apply the steps to percents not listed in the original list. They should be able to supply new percents for practice activities. Tell them that they can use the same steps learned with the new percents. This calls for a positive transfer situation. Plan for practice activities that will require application of percents in the real world. Some possible activities include:

1. 25% of pupils at GAB are in 6th grade.
2. 30% down on a stereo record player.
3. 50% off all prices, etc.

Oral Practice

Explain how you would change each of the following percents to an equivalent fraction:

35%	6%	76%
86%	98%	13%
33 1/3%	40%	128%

Written Practice

1. If Mr. Wilson pays 25% down on a house, what part of the purchase price is his down payment?

2. In a certain area 16 2/3% of all crops were destroyed by floods. What part of the harvest was saved?

3. What part of a graduation class is planning to go to college if 40% filed applications for entrance?

Evaluation Test 8.1.2

Draw a line beneath the equivalent fraction for each percent.

		a	b	c	d
1.	75%	1/3	1/4	3/8	3/4
2.	25%	1/4	3/8	6/7	3/5
3.	8%	1/9	2/25	3/8	7/9
4.	40%	2/3	1/8	2/5	3/8
5.	175%	1 1/5	3/8	1 3/4	1 2/3
6.	16 2/3%	1/9	4/9	1/4	1/6
7.	125%	1 2/3	1 3/5	3/8	1 1/4
8.	85%	9/11	17/20	3/8	18/19
9.	46%	23/50	17/20	3/7	1 5/8

CHAPTER SIX

THE LANGUAGE ARTS DOMAIN

Broad Skills, Enabling Skills,
Specific Skills, and Record Sheet
Language Arts Domain

Table 2

Language Arts Domain

Level	Pre-Test	Post-Test	Grammar
4	____	____	2.4.1. Define singular and plural noun
	____	____	2.4.2. Plural nouns, -s
	____	____	2.4.3. Plural nouns, -es
	____	____	2.4.4. Plural nouns, -ies
	____	____	2.4.5. Nouns, irregular plurals
	____	____	2.4.6. Plural nouns
	____	____	2.4.7. Rules for plural nouns
	____	____	2.4.8. Common nouns
	____	____	2.4.9. Proper nouns
	____	____	2.4.10. Writing days and months in text
	____	____	2.4.11. Capitalizing days and months
	____	____	2.4.12. Capitalizing buildings and streets
	____	____	2.4.13. Naming proper nouns
	____	____	2.4.14. Capitalizing titles

Level	Pre-Test	Post-Test	Grammar	
4	____	____	2.4.15.	Capitalizing "I"
	____	____	2.4.16.	Singular possessive pronouns - apostrophe
	____	____	2.4.17.	Plural possessive pronouns - apostrophe
	____	____	2.4.18.	Irregular plural possessive nouns
	____	____	2.4.19.	Define sentence
	____	____	2.4.20.	Sentences, clauses, and phrases
	____	____	2.4.21.	Define and illustrate types of sentences
	____	____	2.4.22.	Name and punctuate types of sentences
	____	____	2.4.23.	Definition and function of subjects in "telling" sentences
	____	____	2.4.24.	Nouns as subjects
	____	____	2.4.25.	Definition and function of predicate in "telling" sentences
	____	____	2.4.26.	Use of predicates
	____	____	2.4.27.	Define "verb of being"
	____	____	2.4.28.	Discriminate "verbs of being"
	____	____	2.4.29.	Define "doing" verb

Level	Pre-Test	Post-Test	Grammar
4	____	____	2.4.30. Discriminate "doing" verbs
	____	____	2.4.31. Symbol for noun
	____	____	2.4.32. Sentence patterns
	____	____	2.4.33. Symbol for "doing" verb
	____	____	2.4.34. Contractions
	____	____	2.4.35. Define "helping" verb
	____	____	2.4.36. Discriminate "helping" verbs
	____	____	2.4.37. Define verb tense
	____	____	2.4.38. Pattern I sentences
5	____	____	2.5.1. Sentences and nonsentences
	____	____	2.5.2. Capitals and end punctuation
	____	____	2.5.3. Inverted subject and predicate
	____	____	2.5.4. Conjugation of come, run, and eat
	____	____	2.5.5. Define simple subject
	____	____	2.5.6. Discriminate simple subject
	____	____	2.5.7. Discriminate simple predicate
	____	____	2.5.8. Articles introducing nouns

Level	Pre-Test	Post-Test	Grammar
5	____	____	2.5.9. Using singular and plural nouns
	____	____	2.5.10. Using singular and plural possessive nouns
	____	____	2.5.11. Function of verbs
	____	____	2.5.12. Discriminate active verbs and verbs of being
	____	____	2.5.13. Using am, is, are, was, and were
	____	____	2.5.14. Using here and there
	____	____	2.5.15. Discriminating main and helping verbs
	____	____	2.5.16. Using sing, ring, break, and choose
	____	____	2.5.17. Using let and leave
	____	____	2.5.18. Define pronoun
	____	____	2.5.19. Using pronouns as compound subjects
	____	____	2.5.20. Subject pronouns with verbs of being
	____	____	2.5.21. Object pronouns with action verbs
	____	____	2.5.22. Object pronouns with prepositional phrases
	____	____	2.5.23. Naming possessive pronouns
	____	____	2.5.24. Function of possessive pronouns

Level	Pre-Test	Post-Test	Grammar
5	____	____	2.5.25. Possessive pronouns and apostrophes
	____	____	2.5.26. Discriminating adjectives
	____	____	2.5.27. Adjectives and nouns
	____	____	2.5.28. Define "adjectives modify nouns"
	____	____	2.5.29. Using them and those
	____	____	2.5.30. Using this and that, here and there
	____	____	2.5.31. Define adverb
	____	____	2.5.32. Forming adverbs from adjectives
	____	____	2.5.33. Define direct object, indirect object
	____	____	2.5.34. Use of well and good
	____	____	2.5.35. Using negative words
6	____	____	2.6.1. Discriminate noun signals
	____	____	2.6.2. Identifying verbs in contractions
	____	____	2.6.3. Conjugating verbs-regular
	____	____	2.6.4. Conjugating verbs-irregular
	____	____	2.6.5. Using lie and lay
	____	____	2.6.6. Subject pronouns

Level	Pre-Test	Post-Test	Grammar
6	___	___	2.6.7. Using we and us
	___	___	2.6.8. Define descriptive adjective and limiting adjective
	___	___	2.6.9. Degrees of comparison
	___	___	2.6.10. Define and use proper adjective
	___	___	2.6.11. Adverbs modifying other adverbs
	___	___	2.6.12. Comparative forms of adverbs
	___	___	2.6.13. Define and use prepositional phrase
	___	___	2.6.14. Discriminate prepositions and adverbs
	___	___	2.6.15. Using at, to; among, between, and in, into
	___	___	2.6.16. Define conjunction
	___	___	2.6.17. Using conjunctions
7	___	___	2.7.1. Define pronoun
	___ ___	___	2.7.2. List types of pronouns
	___	___	2.7.3. Discriminate nouns
	___	___	2.7.4. List types of nouns
	___	___	2.7.5. Define adjective

Level	Pre-Test	Post-Test		Grammar
7	____	____	2.7.6.	Define adverb
	____	____	2.7.7.	Define interjection
8	____	____	2.8.1.	Using predicate nominative
	____	____	2.8.2.	Define compound subject and compound predicate
	____	____	2.8.3.	Contrast simple and compound sentences
	____	____	2.8.4.	Define predicate adjective
	____	____	2.8.5.	Using predicate adjectives
	____	____	2.8.6.	Discriminating subject-verb agreement
	____	____	2.8.7.	Singular and plural forms of indefinite pronouns
	____	____	2.8.8.	Contrast regular and irregular verbs
	____	____	2.8.9.	Contrast nominative and objective case pronouns
	____	____	2.8.10.	Define nominative case
	____	____	2.8.11.	Define objective case
	____	____	2.8.12.	Name the degrees of comparison
	____	____	2.8.13.	Rewrite sentence fragments and run-on sentences
	____	____	2.8.14.	Using semicolons, colons, italics, quotation marks, apostrophes, and hyphens

TAXONOMY OF GOALS AND OBJECTIVES

LANGUAGE ARTS DOMAIN

Language Arts Domain

Level 4

2.4.1 Given the task, the pupil will clearly explicate the differences in meaning of singular nouns and plural nouns.

2.4.2 Given 25 singular nouns, the pupil will form plurals by adding -s to the singular nouns with 95% accuracy.

2.4.3 Given 25 singular nouns, the pupil will form plurals by adding -es to the singular nouns with 95% accuracy.

2.4.4 Given 25 singular nouns, the pupil will form plurals by dropping the final y and adding -ies to the root with 95% accuracy.

2.4.5 Given 25 irregular nouns, the pupil will change the singular form of each to its current plural form with 95% accuracy.

2.4.6 Given 25 randomly selected nouns which require varying changes in order to form plurals, the pupil will write the correct plural forms with 95% accuracy.

2.4.7 Given the task, the pupil will write the three basic rules for forming plurals from singular nouns.

2.4.8 Given a list of 25 nouns, half of which are common nouns, the pupil will write an S on the common nouns and circle the proper nouns with 95% accuracy.

2.4.9 Given the task, the pupil will write 25 proper nouns capitalizing each.

2.4.10 Given a list of 19 days and months, the pupil will use any six of the months and any three of the days in a story. In each instance, the day and the month will be written out completely, not abbreviated.

2.4.11 When asked to use the names of six months and three days in a story, the pupil does so, writing each month and day with an initial capital letter.

2.4.12 Given a brief story in which building and street names are used, the pupil will capitalize each building and street name, correcting the misuse of the lower case.

2.4.13 Given the command, "Write 25 proper nouns," the pupil will do so, capitalizing each first letter with 95% accuracy.

2.4.14 Given a list of book, story, poem, and report titles, the pupil will capitalize correctly the first letter in words which should be capitalized with 95% accuracy.

2.4.15 Given a reading selection with no capital letters, the pupil will capitalize the word, "I" each time it occurs.

2.4.16 Given a reading selection in which the apostrophe has been omitted from singular possessive nouns, the pupil will add apostrophes correctly with 95% accuracy.

2.4.17 Given a reading selection in which the apostrophes have been omitted from plural possessive nouns, the pupil will add apostrophes correctly with 95% accuracy.

2.4.18 Given 25 nouns which in plural possessive form do not end in -s, the pupil will correctly write the plural possessive form with 95% accuracy.

2.4.19 Given the task, the pupil will orally define the term, sentence.

2.4.20 Given 25 sentences and sentence fragments (e.g., clauses and phrases), the pupil will correctly classify each sentence, clause, and phrase in writing.

2.4.21 Given the types of sentences (i.e., declarative, interrogative, exclamatory, imperative) the pupil will define and give an example of each.

2.4.22 Given a mix of 25 sentences representing the four different types, name each type and place the appropriate punctuation at the end of each sentence.

2.4.23 Given the task, the pupil will write the definition and function of the subject in "telling" sentences.

2.4.24 Given a list of 25 nouns, the pupil will write a grammatically correct sentence for each, using the noun as the subject of the sentence.

2.4.25 Given the task, the pupil will write the definition and function of predicates in "telling" sentences.

2.4.26 Given a list of 25 predicates, the pupil will write a grammatically correct sentence using each predicate.

2.4.27 Given the task, the pupil will define, in writing, the "verb of being."

2.4.28 Given a reading selection, the pupil will write an X on all "verbs of being."

2.4.29 Given the task, the pupil will define, in writing, the "doing verb."

2.4.30 Given a reading selection, the pupil will write an X on all "doing verbs."

2.4.31 Given the question, "What is the symbol for noun?" the pupil will write the answer.

2.4.32 Given the task, the pupil will name and identify sentence patterns with 95% accuracy.

2.4.33 Given the question, "What is the symbol for 'doing verb' " the pupil will write the answer.

2.4.34 Given the group of 48 contractions, the pupil will translate word pairs into contractions, will translate contractions into word pairs, and will recognize contractions in a sentence translating them into appropriate word pairs. These tasks will be performed with 95% accuracy.

2.4.35 Given the task, the pupil will define, in writing, the term, "helping verb."

2.4.36 Given a reading selection, the pupil will write an X on all "helping verbs."

2.4.37 Given the task, the pupil will define these important verb tenses: present, past, and future tense.

2.4.38 Given the task, the pupil will write 25 Pattern I sentences which consist of nouns and verbs containing more than one word with 95% accuracy.

Level 5

2.5.1 Given a selection of 25 sentences and nonsentences in a four-to-one ratio respectively, the pupil will place an X on all sentences with 95% accuracy.

2.5.2 Given a set of 25 sentences with no end punctuation and no capitals, the pupil will add end punctuation and capitals with 95% accuracy.

2.5.3 Given the task, the pupil will write 25 grammatically correct sentences in which the subject and predicate are in inverted order.

2.5.4 Given the task, the pupil will write sentences which correctly use the present, past, and future tense of these verbs: come, run, eat.

2.5.5 Given the task, the pupil will define the term, simple subject.

2.5.6 Given 25 sentences with simple subjects and modifiers, the pupil will place an X on each simple subject with 95% accuracy.

2.5.7 Given 25 sentences containing simple predicates, the pupil will write an X on each simple predicate and identify it as a verb with 95% accuracy.

2.5.8 Given the task, the pupil will write the three articles which introduce nouns.

2.5.9 Given the task to write a term paper on any subject, the pupil will use singular and plural nouns correctly on 95% of the occasions on which nouns are used.

2.5.10 Given the task to write a term paper on any subject, the pupil's use of singular and plural possessive nouns, accurate 95% of the time.

2.5.11 Given the task, the pupil will describe the function of the verb in a sentence.

2.5.12 Given a reading selection, the pupil will identify in writing the "active verbs" and the "verbs of being" used in the sentences.

2.5.13 Given the task, the pupil will write sentences in which the verbs, am, is, are, was, and were, are used correctly with singular and plural nouns.

2.5.14 Given sentences in which the terms, here and there, are used, the pupil will add the form of "verb of being" to be used with 95% accuracy.

2.5.15 Given sentences containing both main and helping verbs, the pupil will write an X on the main verbs and circle the helping verbs with 95% accuracy.

2.5.16 Given the task, the pupil will write sentences using the present, past, and future tenses of these verbs: sing, ring, break, and choose.

2.5.17 Given the task, the pupil will use the terms, let and leave, in ten sentences each with 95% accuracy.

2.5.18 Given the task, the pupil will define the term, pronoun.

2.5.19 Given the task, the pupil will use pronouns as compound subjects in 25 sentences with 95% accuracy.

2.5.20 Given 25 sentences containing verbs of being, the pupil will add the appropriate subject pronoun with 95% accuracy.

2.5.21 Given 25 sentences containing action verbs, the pupil will add the appropriate object pronoun with 95% accuracy.

2.5.22 Given 25 sentences containing prepositions, the pupil will add the appropriate object pronoun with 95% accuracy.

2.5.23 Given the task, the pupil will write each of the possessive pronouns.

2.5.24 Given the task, the pupil will write a description of the function of possessive pronouns.

2.5.25 Given the request, "Please write 25 sentences containing possessive pronouns," the pupil will respond without the use of apostrophes.

2.5.26 Given a list of 100 words, 35 of which are adjectives, the pupil will place an X on each adjective with 95% accuracy.

2.5.27 Given a reading selection, the pupil will write an X on all adjectives, including those which follow the nouns they modify.

2.5.28 Given the task, the pupil will explain what is meant by the statement: "Adjectives modify nouns."

2.5.29 Given the task, the pupil will write 25 sentences containing the terms, them and those; the sentences will be grammatically correct.

2.5.30 Given the task, the pupil will write 25 sentences containing the terms, this and that without the unnecessary terms, here and there.

2.5.31 Given the task, the pupil will define the term, adverb.

2.5.32 Given the task, the pupil will form adverbs from adjectives by adding -ly.

2.5.33 Given the task, the pupil will define the terms, direct object and indirect object.

2.5.34 Given the task, the pupil will orally explain the standard use of terms, well and good, as parts of speech.

2.5.35 Given the task, the pupil will write 25 sentences using negative words in a variety of forms with 95% accuracy.

Level 6

2.6.1 Given 25 sentences, the pupil will place an X on all the noun signals with 95% accuracy.

2.6.2 Given the task, the pupil will write the verbs contained in 25 contractions with 95% accuracy.

2.6.3 Given 25 regular verbs, the pupil will write the principal parts of each verb and the past participle with 95% accuracy.

2.6.4 Given 25 irregular verbs, the pupil will write the principal parts of each verb and the past participle with 95% accuracy.

2.6.5 Given the task, the student will write 25 sentences in which the verbs, lie and lay, are used correctly.

2.6.6 Given the task, the pupil will write 25 sentences in which the subject forms of pronouns are used in declarative and interrogative sentences.

2.6.7 Given 25 sentences in which a blank is left where the terms, we or us, should be, the pupil adds the correct term with 95% accuracy.

2.6.8 Given the request, "Define what is meant by descriptive adjectives and limiting adjectives," the pupil will do so with 95% accuracy.

2.6.9 Given sentences in which the comparative forms of adjectives should be used, the pupil chooses the correct form with 95% accuracy.

2.6.10 Given the task, the pupil will define the term, proper adjective and demonstrate its use with 95% accuracy.

2.6.11 Given the task, the pupil will write 25 sentences in which adverbs are used to modify other adverbs (n = 13) or adjectives (n = 12).

2.6.12 When asked to do so, the pupil will demonstrate the comparative form of adverbs with 95% accuracy.

2.6.13 Given the task, the pupil will define the term, prepositional phrase and write 25 examples of prepositional phrases with 95% accuracy.

2.6.14 Given sentences in which both prepositions and adverbs are used, the pupil will place an X on all prepositions and circle all adverbs with 95% accuracy.

2.6.15 Given the task, the pupil will correctly use each preposition in these pairs: at, to; among, between; in, into.

2.6.16 Given the task, the pupil will define the term, conjunction.

2.6.17 The pupil will demonstrate his grasp of the conjunction by using it in 25 sentences with 95% accuracy.

Level 7

2.7.1 Given the task, the pupil will define the term, pronoun.

2.7.2 Given the task, the pupil will list the types of pronouns.

2.7.3 Given a reading selection, the pupil will write an X on all nouns with 95% accuracy.

2.7.4 Given the task, the pupil will list all the types of nouns.

2.7.5 Given the task, the pupil will define the term, adjective.

2.7.6 Given the task, the pupil will define the term, adverb.

2.7.7 Given the task, the pupil will define the term, interjection.

Level 8

2.8.1 Given the task, the pupil will write 25 sentences containing predicate nominatives with 95% accuracy.

2.8.2 Given the task, the pupil will define the terms, compound subject and compound predicate.

2.8.3 Given the task, the pupil will contrast (in writing) the characterististics of simple and compound sentences.

2.8.4 Given the task, the pupil will define the term, predicate adjective.

2.8.5 Given the task, the pupil will write 25 sentences containing predicate adjectives.

2.8.6 Given 25 sentences in which about half of the sentences have agreement between subject and verb, the pupil will place an X on those sentences which agree with 95% accuracy.

2.8.7 When asked to do so, the pupil will write the singular and plural forms of indefinite pronouns (i.e., each, either, both, several).

2.8.8 When asked to do so, the pupil will write the contrast between regular and irregular verbs.

2.8.9 When asked to do so, the pupil will write the contrast between nominative case pronouns and objective case pronouns.

2.8.10 Given the task, the pupil will define the term, nominative case.

2.8.11 Given the task, the pupil will define the term, objective case.

2.8.12 Given the request, the pupil will name the degrees of comparison: positive, comparative, and superlative.

2.8.13 Given a series of 25 sentences, fragments and run-on sentences, the pupil will use grammatically correct English to restructure them. The criterion for mastery is 95% accuracy.

2.8.14 Given 25 sentences in which semicolons, colons, italics, quotation marks, apostrophes, and hypens have been omitted, the pupil will insert the punctuation marks as they are needed with 95% accuracy.

INSTRUCTIONAL STRATEGIES

LANGUAGE ARTS DOMAIN

Lesson Plan

Scope

The following lesson plan will cover instruction for the short term objective for teaching contractions. The particular items will change (i.e., from the "not" words to the "to be" words etc.), but the basic arrangement will be maintained.

Objective 2.4.34

Given the group of 48 contractions, the child will translate word pairs into contractions, will translate contractions into word pairs, and will recognize contractions in a sentence translating them into appropriate word pairs; these tasks will be performed with 95% accuracy.

Initial Presentation

Billy, for the next few days I will be helping you learn about contractions. Here is what they look like. (Billy will be presented with a card of 42 contractions.)

Look these over. Perhaps you can read some of the words or part of the words. Can you? Good. I will read some more for you. As I read them listen and see if they sound familiar to you. Do they? Yes, they are words we use in speaking everyday. They are short ways of saying things like do not, have not, is not, and did not.

Right now go around the room, pick out a friend, and talk to him or her about anything you like, a TV program or something like that. Talk for a few minutes, but while you're talking listen carefully and see if you can count how many times you or a friend use the short form of two words that we call a contraction. Look at the clock and come back after you have spent five minutes doing this.

How many times did you or your friend use that kind of word, a contraction? A lot. Yes, we do use these words a lot when we are speaking.

You will also see these words when you are reading and later, you may use them when you are writing and you want to make what you are writing sound like every day language. It will help you learn to read better if you can recognize these contractions and know what two words they stand for. You probably know some of them already. I am going to help you learn all 48, so you can see them and know what they are, quickly and easily.

Here is the way you will learn the contractions:

1. First you will look at two words and read them, and you will look at the contraction next to the word. The contraction will be underlined because it is the answer. Then, I will take away the answer, and you will write it on the paper.
2. Next you will look at some contractions and read them, and you will look at the two words next to the contractions. The two words will be the answer; they are the two words the contraction stands for, and they will be underlined. Then I will take away the answer, and you will fill in the blank with the correct answer.
3. Last you will look at some sentences and read them. There will be contractions in the sentences and they will be underlined and will have two words written above them. You will name the contraction in the sentence and tell me the two words it stands for. Then I will give you a new sheet without the underlining in the sentences and without the extra words. You will read the sentence, find the contraction and tell me what two words it stands for.

4. When you seem to know the contractions well you will be given a test with the three tasks I've mentioned and all of the answers on it. You will study the test and then I will take it away. You will then take the same test without the answers on it and try to do as many as possible, as quickly as possible.

When we have finished you will be able to recognize and translate contractions as easily as you use them in your conversations now.

That is what we will be doing. Do you have any questions? If you have any at any time feel free to ask me.

Instruction and Practice

Essentially, instruction will be a reiteration of the information presented in 3A.

With regard to practice, the following steps will be implemented repeatedly until the objective is mastered:

1. Present a cue card for the "not" contractions using the prompting methods below: (Use with one group at a time - e.g., is, are, was)

Teacher presents the pair orally and visually		Teacher presents the stimulus		Billy's response
is not	isn't	is not	____	____
are not	aren't	are not	____	____
was not	wasn't	was not	____	____
do not	don't	do not	____	____
does not	doesn't	does not	____	____
did not	didn't	did not	____	____
have not	haven't	have not	____	____
has not	hasn't	has not	____	____
had not	hadn't	had not	____	____
can not	can't	can not	____	____
could not	couldn't	could not	____	____
should not	shouldn't	should not	____	____
would not	wouldn't	would not	____	____
will not	won't	will not	____	____

2. Present the "not" contractions but arrange them in a random order and have them on cards with the word pair first and then the contraction. Use a large table and use a kind of word puzzle method. The cards will look as follows:

do not ______ don't

Present one card at a time completing the card for Billy until all cards are on the table. Then remove the answer cards, mix them up and give them to Billy to place appropriately. (Use the next group of words - for example, do not, does not, did not)

3. Present Billy with a cue card which has three sentences each containing a contraction which has the word pair above it; the contraction should be underlined. Then remove the cue card and present him with another card containing the same sentences but without the underlining and word pairs. Have him pick out the contraction and name the word pair. The cue cards might look like this:

has not
Mary hasn't done her homework.

have not
I haven't seen that movie.

had not
If he hadn't paid, he would have lost his job.

Mary hasn't done the homework.

I haven't seen that movie.

If he hadn't paid, he would have lost his job.

(Again, use the next group of words such as the "have" words.)

4. Once Billy has worked with all of the word groups for "not" in one of the presentation forms, hold massed practice sessions. Each session should include all words using presentation method 1, 2, and 3.

5. Following each massed practice session and a brief rest period, present Billy with a study test which has all three presentation methods represented, and using combinations of all of the words. The answers will be written in for Billy to study. When Billy indicates he is ready, give him a test similar to his study-test but without the answers and instruct him to work as quickly as possible filling in the answers.

The above presentation methods should be used for all of the different word groupings of contractions (i.e., for the "to be," "to have," "will," "would," words as well as the "not" words). Refer to pages 237-243 for example practice sheets, study-test, practice cards, and contraction tables.

Evaluation

When mastery seems to be attained, the Contractions Inventory will be administered to determine if indeed mastery has been met. Administration, scoring, and interpretation instructions accompanying the test will be followed.

(An additional section will be added to the test to cover the revised objective; it will include testing of the sentence reading and identification of contractions in sentences.)

When mastery is confirmed, practice on the whole will continue for a period of time equal to that of the original mastery time in order to accomplish 200% overlearning. Then evaluation will occur again.

Generalization and Transfer

The behavior objective and practice presentation methods include the provision for generalization when Billy is taught to recognize and translate contractions in sentences.

EXAMPLE PRACTICE SHEET

Presentation 1

1.	is not	isn't	1.	is not	________
2.	are not	aren't	2.	are not	________
3.	was not	wasn't	3.	was not	________
4.	do not	don't	4.	do not	________
5.	does not	doesn't	5.	does not	________
6.	did not	didn't	6.	did not	________
7.	have not	haven't	7.	have not	________
8.	has not	hasn't	8.	has not	________
9.	had not	hadn't	9.	had not	________
10.	can not	can't	10.	can not	________
11.	could not	couldn't	11.	could not	________
12.	should not	shouldn't	12.	should not	________
13.	would not	wouldn't	13.	would not	________
14.	will not	won't	14.	will not	________

Fold here

EXAMPLE PRACTICE CARDS

Presentation 2

don't

do not ________

doesn't

does not ________

didn't

did not ________

EXAMPLE PRACTICE SHEET

Presentation 3

has not
Mary (hasn't) done her homework.

have not
I (haven't) seen that movie.

had not
If he (hadn't) paid, he would have been thrown out.

Fold Here

Draw a line under the contraction. Write the word pair above it.

1. Mary hasn't done her homework.

2. I haven't seen that movie.

3. If he hadn't paid, he would have been thrown out.

EXAMPLE OF TEST

Presentation 2

Write the contraction:

1. is not ________
2. are not ________
3. was not ________
4. do not ________
5. does not ________
6. did not ________
7. have not ________
8. has not ________
9. had not ________
10. cannot ________
11. could not ________
12. should not ________
13. would not ________
14. will not ________

Write the word pair:

1. I'm ______ ______
2. she's ______ ______
3. he's ______ ______
4. it's ______ ______
5. that's ______ ______
6. you're ______ ______
7 we're ______ ______
8. they're ______ ______

Underline the contraction and write the word pair above it:

1. I've finished the book.
2. What you've done is fine.
3. The house we've painted is white.
4. They've come home for Christmas.
5. Do you know where he's gone?
6. She's acted sick the past three days.
7. I'd finished my homework when he called.
8. I would have made supper if you'd come home.
9. We'd gone on vacation when he called.
10. I would like to know what they'd done.

*To make this a Study Test, copy this page and fill in correct answers.

CONTRACTION TABLES

"Will" Table

Pronoun	Will	Contraction
I	will	I'll
you	will	you'll
they	will	they'll
we	will	we'll
he	will	he'll
she	will	she'll
it	will	it'll

"Would" Table

Pronoun	Would	Contraction
I	would	I'd
you	would	you'd
they	would	they'd
we	would	we'd
he	would	he'd
she	would	she'd
it	would	it'd

"Let us"

Verb Form	Us	Contraction
let	us	let's

CONTRACTION TABLES

"To be" Table

Pronoun	To Be Verb Form	Contraction
I	am	I'm
she	is	she's
he	is	he's
it	is	it's
that	is	that's
you	are	you're
we	are	we're
they	are	they're

"To have" Table

Pronoun	To Have Verb Form	Contraction
I	have	I've
you	have	you've
we	have	we've
they	have	they've
he	has	he's
she	has	she's
I	had	I'd
you	had	you'd
we	had	we'd
they	had	they'd
he	had	he'd
she	had	she'd

CONTRACTION TABLES

"Not" Table

Verb Form	Not	Contraction
to be:		
is	not	isn't
are	not	aren't
was	not	wasn't
were	not	weren't
to have:		
have	not	haven't
has	not	hasn't
had	not	hadn't
to do:		
do	not	don't
does	not	doesn't
did	not	didn't
can:		
can	not	can't
could	not	couldn't
should:		
should	not	shouldn't
would:		
would	not	wouldn't
will:		
will	not	won't

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Lesson Plan

Scope

This lesson plan teaches that the dictionary is one of the most useful reference books one can own. It can help one learn to spell, pronounce, and understand the meanings of words in social studies and in all other subjects in school. It will help the student learn new words or new ways of using words he/she already knows. In a dictionary the words are arranged in alphabetical order to help one find any word quickly and easily. This lesson plan teaches the effective use of the dictionary to locate information by using alphabetical order, guide words, pronunciation key, syllabication, and the choice of appropriate meanings.

Objective

The learner will make effective use of the dictionary to locate information, by using alphabetical order, guide words, pronunciation key, and syllabication, and by choosing the appropriate meaning of the word for the context in which it is used in social studies.

Initial Presentation

Tell the students it is time to work on dictionary skills in social studies. One of the important study skills is knowing how to use the dictionary. The dictionary is a long list of words arranged alphabetically. The dictionary is used not only to increase vocabulary but also to refer to when preparing reports. Remind the children that they may need to check the spelling for a written report or the prononciation of a word for an oral report. In these and similar cases, the dictionary will be a helpful study aid. It can be of great help, in school and out. if used correctly. Explain to students that they have studied dictionary skills in reading, English and spelling, and that they will continue to study these skills in order to make effective use of the dictionary to locate information. Emphasize to the children that one of the most important things to remember is that the words in the dictionary are in alphabetical order. The words looked up in the dictionary are called entry words. Guide the students to realize that they can make effective use of the dictionary to locate information in social studies by using alphabetical order, guide words, pronunciation key, and syllabication, and by choosing the appropriate meaning of the word for the context in which it is used. Tell the students to get their writing material (braille writers and/or pencils and paper). Read and explain the objective, including the mastery criteria, to the students. Have the students copy the objective from dictation, and tell them to keep it in their notebooks. Emphasize that they are going to learn to make effective use of the dictionary to locate information in social studies.

State the five skills necessary to make effective use of the dictionary. They are 1) ability to alphabetize, 2) ability to use guide words, 3) ability to use pronunciation key, 4) ability to interpret syllabication and 5) ability to choose definitions. Explain each skill. In a dictionary the words are arranged in alphabetical order. To begin, one of the most important things is to learn to use alphabetical order with ease and skill. It is very easy to arrange words in alphabetical order if each word begins with a different letter. However, many words begin with the same letter, such as able and across. In this case look at the second letter in each word. Think, "Ab will come before Ac." Now, think about arranging the words: above, across, able, and act. The two words that begin with ab will be first. This time look at the third letter in each word. In other words, if the first two letters of any word are the same, look at the third letter.

the one that fits exactly. If the meaning of a word is not known, look in the dictionary. The dictionary uses several methods to add to a person's understanding of a word, such as:

1. The dictionary explains some words with a single-word definition that mean the same or almost the same thing.
2. The dictionary often uses longer phrases of explanation.
3. The dictionary may use the word in a sentence or phrase to show the meaning by example.
4. Many of the words in the dictionary have more than one meaning. When a word that is looked up is defined with more than one meaning, be sure to choose the meaning that fits the sentence in which the word is used.

Tell the children to read the definitions of the following words from the dictionary: weather, globe, and season. Reinforce students' responses and attending behavior.

Instruction and Practice

Provide the students with a practice session. Usually it takes the braille student a longer period of time to complete the dictionary work than it does the student using print. There will, of course, be variations of this rule depending on the students. The teacher should use his or her own judgement. Ask the question, "What skills are necessary to use a dictionary well?" Have the children read from the text, John Smith, Wilderness Leader. In addition, play the tape on Captain John Smith. Give the students the following words to locate information on using the dictionary skills taught: survey, wilderness, continent, possession, and barge. The time allowed for this practice session should be two class periods (approximately 55 minutes each). If more time is needed, the teacher should allow for it.

While children are working, check with each one individually to see if he/she is having difficulty, and provide them with corrected feedback. Call attention to the skills necessary to make effective use of the dictionary to locate information. After students have completed this activity, provide them with a practice written session. While the students are using the dictionary, (braille and/or large print), and completing the written work, provide them with corrective feedback. When they complete this practice session, review the correct answers. Let the students ask for help during the initial practice sessions (approximate practice time, two class periods, 55 minutes).

Provide another practice session if necessary to make effective use of the dictionary to locate information. Feedback procedures should be given as described previously. Let students ask for help. Provide as many practice sessions as are needed similar to those described above, but gradually encourage students not to ask for help, but to work more independently without assistance. Continue to provide appropriate knowledge of results and reinforcement.

Oral and written recitation activities must be incorporated into instruction and practice. The activities should include textbook, oral questions, dictionaries, tapes, and listed words. Students should be asked to make effective use of the dictionary to locate information. No help can be used during this recitation. Continue to provide corrective feedback and reinforcement during recitation.

Students need to know how to get as much help as possible from the dictionary since they will continue to meet new words everyday.

Evaluation

The initial presentation and instruction and practice activities described above will probably take several days to complete (55 minutes a day). When the students are completing the activities with ease and with few errors, begin to evaluate the objective. The evaluation should take one class period allowing more time as needed for individuals. The evaluation will consist of students making effective use of the dictionary to locate information by using necessary skills. Written instructions (braille and/or large print), will be provided for students (see sample test).

Generalization and Transfer

Review the skills procedure pertaining to making effective use of the dictionary to locate the information. Tell the students they will be tested on these skills procedures again in the near future. Specify that you want them to be able to use the dictionary skills effectively and with ease to locate information independently. Review the skills necessary to make effective use of the dictionary. Give the students a practice test. Plan half the practice time it took for original practice session learnings. The materials and activities should be different from the activities used for acquisition. Possible activities include:

1. Using spelling dictionary to locate information on spelling words.
2. Using the glossary in reading books to gain information.
3. Using an encyclopedia to report on a topic.

Evaluate for retention after these practice sessions.

First, the student should be able to use the dictionary to enlarge his/her vocabulary in day to day activities in school and out. Second, the student should be able to locate information in other reference books by using dictionary skills. An example of an activity is to use the encyclopedia to gather information on a particular topic to be used for a special program. Another example of an activity is to design and make a telephone directory for personal use and convenience.

Describe the overlap between the old and the new tasks. Remind the students that they already know how useful the dictionary can be. Emphasize that when the student needs to know how to spell, pronounce, divide, or learn the meaning of a new word, the dictionary is a most valuable study aid.

Sample Test

Directions: Below you will find ten sentences with an underlined word in each. Read the sentences carefully. Use the dictionary to locate each underlined word. Say the word silently. Read every meaning of the word and choose the meaning that fits the context of the sentence. Write the number of the meaning of the word that fits the underlined word at the end of the sentence. Braille students will need to number each sentence on a separate sheet of paper. They should write the underlined word and the number of the meaning right after the word. Work carefully, but as quickly as possible.

1. The outing kindled their interest in the early days of the railroads.
2. The climate in Macon, Georgia is usually rather himid.
3. The surface of the globe has been divided by geographers into 360 equal parts by drawing meridians from pole to pole.
4. The men had to cross the ocean in order to get to America.
5. You should be able to describe the difference between a continent and an island.
6. The terrible hurricane hit the coast of Florida.

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7. West of the Great Plains are the mountain ranges with high, dry plateaus and desert lands between them.
8. The first spinning machine built in the United States designed to make use of water power was built in Rhode Island in 1790.
9. Please locate the equator on the globe.
10. It is important to learn to trade with other countries.

Lesson Plan

Scope

The following lesson plan teaches the learner about the sections of a newspaper.

Objective

To learn about the sections of the newspaper.

Initial Presentation

The daily newspaper is an abundant and readily available source of information for teachers and children. It can be a supplement to almost any textbook in grades kindergarten through 12.

Many major newspapers provide the Newspaper in Education (NIE) Program. As part of the NIE program teachers are exposed to educational materials related to newspapers, given discounts on newspapers bought for classroom use, and given tours of the newspaper office.

To stimulate curiosity and interest in newspapers before they arrive, place a large wrapped package with a sign attached to it reading, "Do Not Open Until September 20th (or whenever you plan to start using newspapers) somewhere in the classroom. Then, on the day your bundle of papers arrive, place them inside the package and let students open it.

Explain to the students that they are going to be learning a great deal about newspapers in the weeks to come. The first day each child should have his/her own newspaper, and should be allowed to take it home with him/her that day. Even blind students should be given a paper on this day in order for them to become familiar with it. After the first day, students may share newspapers since sometimes they are too large for one child to handle. Students should be given an opportunity to spread the newspapers out on the floor and examine them for about five minutes. Blind students will benefit from the comments made by their sighted peers.

After the students have examined the newspapers, gather the children in groups and let them talk about their discoveries. Explain to them that newspapers are fragile. Demonstrate how to turn the pages and show them how the newspaper is put together in sections.

Direct the students' attention to the index on the front page. Compare it with a table of contents in their reading books. Remind the students that an index or table of contents helps the reader find information quickly. Looking at the index the student will see that the main topics of the newspaper are in a column on the left and directly across from each topic is a page number. This page number indicates the page on which the student will find the topic.

Ask students where they could find certain information, such as:

Dear Abby Football scores

High and low temperatures of this city

TV programs at 7:30 p.m.

Editorials Comics

Remind the students to use the index on the front of the page of the newspaper instead of flipping through the paper.

Instruction and Practice

Each time that the newspaper is used, all sighted children should make use of any low-vision aids needed to enable them to see the small print. It should be emphasized to the blind students that knowledge of a newspaper is just as important as reading it.

Have the students turn to the front page. Point out the name of the newspaper, price, place of publication, date, etc. Some students may be able to give the name of their own hometown newspapers. Emphasize to the students that even though all newspapers are not the same, basic newspaper terms will apply to all newspapers.

Help the students find the editorial page. Explain to the students that the editorial page contains facts and opinions of the newspaper editors and also opinions from the public in the form of letters. Read at least two of the editorials and help the children distinguish between fact and opinion. Read some of the letters to the editor and encourage comments from the students. At a later date the students will be able to formulate an opinion and write their own letters to the editor.

Examine the sports pages. Make the children aware that, unlike the editorial page, the sports section consists of a number of pages. Point out different sports written about on these pages and ask the children to name their favorite sport. List all the different sports in one day's paper under two titles: sports you play alone, and sports you play in teams. Name three sports for each title.

In discussing the news pages, explain what is meant by local, state, national and world news. Help the children find a story of each type and read them. Lead the children to discover that each type of news is usually in a section of its own but may be contained in another section. For instance, a local news story may be continued on a page with state news due to lack of space. After the students have had some experience in locating and reading different types of news stories, have the children cut out a story of each type and label it. The teacher must read the stories to the blind students and help them make their choices. Using raised maps let the students locate the origin of news stories on a United States or world map and connect the stories with their place of origin with colored yarn.

Explain to the students that the classified ads are usually located at the back of the newspaper. Using the index, the students should turn to the classified ads. Help the student locate the ads for the following:

1. A lost dog
2. A 1975 Ford for sale
3. Employment for a college graduate
4. Part-time employment for a high school student
5. A 3-bedroom house for sale

As each ad is found, read it and encourage comments from the students. Explain any abbreviations used in the classified ads.

Using the index, help the students find the entertainment section. Give each student a practice sheet to figure entertainment costs for a couple.

Many sections of the newspaper, such as horoscopes and "Dear Abby," would be introduced along with other sections as they are encountered.

Evaluations

The instruction and practice activities could be expanded to last the school year or could be completed in a number of days depending on the depth desired. Each session would probably last forty to forty-five (40-45) minutes per day. When the students are able to use the index to find the various sections of the newspaper begin to evaluate them. Teacher observation is most important. (See practice sheets.)

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Generalization and Transfer

Throughout the lesson, emphasis should be placed on the use of newspapers in daily life. Students will use newspapers to find extended weather forecasts, favorite television listings, entertainment available, horoscopes, and to keep themselves informed of current events. Blind students will usually have a reader to help them with needed information. Many cities, such as Macon, offer cassette tapes of Home Talking News. These tapes are compilations of items of interest from the local paper which are furnished to handicapped people by a savings and loan company.

PRACTICE SHEET

Entertainment

A. Imagine that you are a teen-aged boy taking a girl out to dinner and a movie. Go through today's newspaper ads and decide where you would like to eat. Clip ad and paste below.

B. Now decide which movie you would like to see. Clip that theater ad and paste below.

How much will dinner cost for two?

How much will two tickets cost?

How much money will you need for this date?

If you had $20 for this affiar, how much change would you have?

PRACTICE SHEET

A Scavenger Hunt

1. How many sections does the newspaper have?
2. On what page do you find the first want ad?
3. Name a person written up in "People."
4. Who drew the cartoon on the editorial page?
5. Who is the Executive Editor of the paper?
6. How many letters from readers are there?
7. What does your horoscope say for the day?
8. What is going to be high temperature for the day?
9. What are the movies at the Macon Mall Quad Cinema?
10. Name a famous person written about in the sports section.

LESSON PLAN

Scope

This lesson plan is limited to only two parts of speech -- nouns and pronouns.

Objective

When presented with a short passage containing at least one word of all eight parts of speech, the student will identify the words for two parts of speech.

Initial Presentation

Get the students' attention by enthusiastically telling them that it is time to have grammar. Read and explain the objective to them. Tell students that there are eight parts of speech but today only parts will be studied -- nouns and pronouns. Ask the students to look around the classroom and name the things they see. Tell them that all the objects they have named are nouns. Many things which are associated with the classroom but which cannot be seen or touched are also nouns: interest, thought, education, instruction, and cooperation. Define noun. A noun is the name of something - something which, you may or may not be able to see or touch. Some examples are:

Persons -- mother, father, mayor, teacher

Places -- canyon, city, kitchen

Things -- train, lamp, year, bread

Ideas -- grief, desire, speed, democracy

Ask a student to give the nouns of several sentences. For example: A saw and a hammer were lying on the bench. Hopefully, someone will point out the three nouns found in this sentence: saw, hammer, and bench. Tell the class that a word is a proper noun when it names a particular person, place or thing. Example: Harry went to Denver on Easter. Ask for the proper nouns. The students should correctly point out the proper nouns -- Harry, Denver, and Easter.

Emphasize that a common noun does not name a particular person, place, or thing. Here is a list of some common nouns:

Persons -- child, teacher, movie star

Places -- town, meadow, street, gym

Things -- book, airplane, scissors, shed

Ideas -- justice, anger, friendship, fear

Tell the students that a word is a common noun when it is used as the name of any one of a whole class of persons, places, or things, for example: A boy went to the city on a holiday. Ask the students to name the common nouns found in the sentence. Hopefully, they will pick out boy, city and holiday. Tell the students that the form of a noun which refers to two or more persons, places, or things is the plural form. Remind the students that plural means more than one. Give an example of this: The girls in those classes have written poems. Cite the plural nouns: girls, classes and poems.

Give a short passage to the students to see how well they understand nouns: A flock of birds passes over our heads. They are off for far distant lands. Perhaps they will pause for a winter in the South. Flying for long distances is part of the life of most Northern birds twice in one year. Be aware that some student might have difficulty doing this assignment and this work may take several days before each student will have a great degree of success in doing it.

Pronouns: a word is a pronoun when it is used in place of a noun. Tell the students that there are several types of pronouns: example - personal, indefinite, reflexive, intensive, and demonstrative pronouns. Then give an example of each type.

Personal pronouns are those which have different forms for the first, second, and third persons. Example: They told us and we thanked them. They, us, we and them are personal pronouns. Other words used as forms of personal pronouns are I, me, you, he, him, she, her and it.

Indefinite pronouns are those which do not take the place of any definite nouns. Example: Everybody knows someone in the group. Neither knows anyone; both are strangers.

Many other words, such as each, nobody, somebody, few, some, several, may be used as indefinite pronouns.

The words who, which, what, and whom are used as interrogative pronouns in questions. Examples: Who or what broke that window? Which was broken? Who do you suspect?

A reflexive pronoun refers to a noun used earlier in the sentence, usually the subject. Example: Mary saw herself in the mirror.

Other words used as forms of reflexive pronouns are myself, ourselves, yourself, yourselves, himself, itself and themselves.

An intensive pronoun is used to emphasize a noun or another pronoun. Example: John himself mailed the letter. I do this job myself. Intensive pronouns have the same forms as reflexive pronouns.

A demonstrative pronoun is used to point out a person or thing. Example: This is my home, and these are my things. This and these are demonstrative pronouns.

After it is felt that the students understand pronouns, give a short passage to see if each student can pick out all of the pronouns found in it. Example: That is an interesting picture. I bought it for myself. Not everyone cares for old pictures; I like them very much. It reminds me of an old city in France.

Instruction and Practice

Each student will be provided with a braille or large print textbook. Braille writers will be available for braille students when needed. The teacher will assign a given lesson in the textbook with directions as to what to do.

Exercise

Directions: Find the nouns in the following passages. Underline each common noun once and each proper noun twice. Braille students should copy all nouns and put a C beside common nouns and a P beside proper nouns.

One day last week, Father took a friend of mine and me to the city. We visited a museum and the Roxy Theater. We ate dinner at a big hotel called the Commodore Hotel. We got to the Pennsylvania Station just in time to catch the Sunset Limited for home.

After students finish this exercise, have them check and discuss for understanding. Distinguishing between common and proper nouns poses problems for some students. Individual and group work should be worked on for several days to make sure all students understand the difference.

Exercise

Directions: Read the following paragraph and pick out all nouns. Put the common nouns in one column and the proper nouns in another.

Glacier climbing has brought my father a great deal more than an enjoyable job. One day when he was a young man, he and two others were on duty at Eliott Glacier on Mount Hood, Oregon. Suddenly, someone called, "Help! Help!" As they knew how many a disaster had taken place when someone had fallen into one of the deep crevasses on the glacier, the men at once started toward the voice. They had taken every precaution before starting on patrol. They eyes were protected by sunglasses and their hands by mittens, and they wore spikes on their feet. They had a great deal of rescue training and were able to proceed down the sheer side of the glacier without mishap. They found a man lying flat on the ice, barely able to hold another man who was roped to him and dangling over a crevasse. My father helped the lead man pull the other man up.

"I slipped," explained the second man. "There was slackness in the rope. It was my fault. If the rope had been taut, I wouldn't have lost my footing. I don't know how I can express my thanks to you for your aid."

To reinforce this lesson, the teacher might ask students to write original paragraphs or choose paragraphs from novels to read, and pick out nouns in them to discuss with the class.

The same types of activities may be used for teaching pronouns. Students should be reminded that pronouns are words that take the place of nouns. For example: Bob went to the store. Bob is a noun. He went to the store. He is a pronoun.

After a discussion on pronouns, have students work out the following exercise on pronouns.

Exercise

Directions: There are several pronouns in the following quotations. Write the pronouns on your paper after the number of each quotation.

1. Books think for me. (Charles Lamb)
2. I never think of the future. It comes soon enough.
   (Albert Einstein)

3. Time is but the stream I go fishing in. (Henry D. Thoreau)
4. She wears her clothes as if they were thrown on with a pitchfork. (Jonathan Swift)
5. In the faces of men and women I see God. (Walt Whitman)
6. Life is very short, and very uncertain; let us spend it as well as we can. (Samuel Johnson)
7. I wear the chain I forged in life. (Charles Dickens)
8. A teacher affects eternity; he can never tell where his influence stops. (Henry Adams)

Exercise

Directions: The nouns in the following paragraph are overworked. Ask students to read the paragraph and decide which nouns need to be replaced by pronouns. Rewrite the paragraph using pronouns where appropriate.

When Ted met Lorraine, Ted noticed that Lorraine was carrying several books. Ted offered to help Lorraine. Lorraine thanked Ted.

Hopefully, they will rewrite the passage like this:

When Ted met Lorraine, he noticed that she was carrying several books. He offered to help her. She thanked him.

If it is felt that the students need more drill reteach some of the things previously taught. Finding pronouns should be fairly easy after a good understanding of nouns.

Evaluation

Upon completion of this objective, a written test (see sample test) will be given to the students to see how well they understand nouns and pronouns. If mastery is not attained at this point, the lesson will be retaught at a later date.

Generalization and Transfer

Words, which are building blocks of language, are used in eight different ways. They have, therefore, eight different names which are called parts of speech. It is hoped this plan will teach two things about nouns and pronouns -- what they are and how they are used.

Hopefully, this plan will help students in performing the following tasks:

1. Writing reports, letters, etc.
2. Distinguishing between proper and common nouns.
3. Understanding the printed page.
4. Using words in all kinds of written work.

Written Test

Nouns and Pronouns

Directions: There are twenty-five nouns in the following passage. Make a list of them on your paper. Some nouns will be listed more than once.

Beownly is a great hero of Old English literature. When the king of a neighboring land needed aid, Beownly accepted the challenge. A great giant named Grendel was terrifying the kingdom. The monster would strike in the night, and each time would eat several men. Beownly met Grendel without any weapons. With his superior strength the great warrior tore off the arm of the fiend. The news of his accomplishment spread throughout the country.

Written Test

Pronouns

Directions: There are several pronouns in the following passages. Make a list of them on your paper. Some pronouns are listed more than once.

In the spring I hiked through a national park. Around me were many kinds of animals. On several occasions I spotted some deer. I found a doe and her spotted fawn in a little glade. When they saw me, they ran quickly into the forest. I was glad that they were protected by law. At one time the Key deer, approximately the size of a large Collie, were hunted without restrictions. Almost all of them were killed by hunters. Now the population of Key Deer is increasing in the Big Pine Key of southern Florida. During colonial times game laws protected the white-tailed deer from hunters.

For many hours I wandered among the scores of animals. As I approached, I could hear animals as they scurried through the trees in alarm. Soon after sundown I returned to my car.

Lesson Plan

Scope

This lesson plan is designed to teach the meaning and use of an Exclamation Point.

Objective

The learner will correctly use an Exclamation Point.

Given ten (10) written sentences in which punctuation has been omitted, the student will demonstrate command of five punctuation skills with 95% accuracy.

Initial Presentation

Review some of the punctuation marks learned to date.

In the English language there are several marks used to indicate pauses in a sentence and to express command and emotions which make the meaning clear. We use periods (.) at the end of statements, and commas (,) to separate the day from the year when writing a date and to separate the name of a city from the state. We use a question mark (?) at the end of a sentence that asks something.

An exclamation point (!) is used at the end of a sentence to show expressions of fear, joy, anger, excitement, or some other strong emotions. Examples:

1. My dog is named Butch. (period)
2. Butch was born in Macon, Georgia (comma)
3. Whom did Butch chase? (question mark)
4. How the lightning flashed! (exclamation point)

The class will play a game based upon the usage of the correct punctuation mark to reinforce their knowledge of the marks. The class is divided into teams A and B. Someone on team A may give a sentence for someone on team B to give the correct punctuation.

The chief value of this game is not to win but to learn to punctuate accurately.

Instruction and Practice

Practice each punctuation mark talked about separately. And then have a practice session with all together.

Provide worksheets with sentences that need punctuation (period, comma, question mark, and exclamation mark). Review and illustrate examples, orally and in writing, before each practice session. Continue to provide experiences until mastery of exclamation point is attained. Provide instant feedback during practice sessions. See related practice at conclusion of this plan.

Evaluation

When students are completing the practice sessions without errors, evaluation of objective should begin. See sample evaluative test.

Generalization and Transfer

Review the use of periods, commas, question marks, and exclamation marks. Tell students they should be able to define the punctuation marks and write examples of each. Some possible activities:

1. Timed worksheets to improve rate of response.
2. Challenge matches where two students try to stump each other.
3. Students should be able to create sentences not used in the original practices for punctuations.

Evaluative Test

Read these sentences, put an exclamation point where it belongs.

1. Bob is a good friend of mine
2. Hurry, hurry, or we'll be late
3. Please pass the butter
4. Is this your book
5. Oh, there goes my best hat
6. Look out for that fire engine
7. How I wish I hadn't done it
8. What delicious pie this is
9. How that boy can run
10. Is there a bird nest in that tree

Period, Question, and Exclamation Point

Put the correct punctuation mark at the end of each sentence below.

1. Did I tell you what Butch did
2. Mother left him in the car
3. He tore the paper off the cake
4. Can you guess what he did
5. He ate most of the cake
6. He got frosting all over him
7. What a mess our car was
8. How angry Mother was

Related Practice

Period - Question Mark

Put a period at the end of each sentence that tells something and a question mark at the end of each sentence that asks something.

1. The class visited an airport
2. They went on Wednesday
3. The pupils watched the planes land
4. Several planes took off from the field
5. The airport is very large
6. May I help you raise the flag
7. Bob raised his hand
8. It is raining outside
9. My kite is higher than yours
10. Where is your kite

Lesson Plan

Scope

The following lesson plan will cover instruction for the short term objective listed below. The student should be able to locate specific information in his/her own after spending a few sessions practicing locational skills.

Objective

The pupil will demonstrate ability to use resources of the library by using the table of contents and index of a particular book to answer specific questions.

Initial Presentation

"Is there any way a reader can find out what is inside a book?" (a student may mention the card catalog.)

"The card catalog is a good suggestion; however, it doesn't tell much except what the book is about in general."

"Reading a book is another way to know what is inside. But sometimes we need to find important information quickly, and we do not have time to read an entire book."

"Turn to page 145 in your English book, Patterns of Language, and read the section entitled "Using Nonfiction Books Effectively." (A discussion about using this table of contents follows. See illustration I.)

"Here is a sample of a table of contents. (illustration II.) Do you see the numerals on the left? They stand for the chapters in the book. Those numbers on the right stand for the pages."

"Please write your name, the date on the paper and write the answers to the following questions."

"1. To what chapter would you turn in order to find out where the Spice Islands are?

2. In which chapter might you find a great recipe for Gingerbread?

3. What chapter would give information about honey?"

(A discussion ensues.)

"Most non-fiction books contain information. They have a table of contents which is in the front of the book and it tells on what page each part begins. The table of contents also tells us how a book is organized."

"Some books are divided into parts or units with chapters in each unit. The table of contents shows this. Knowing the plan of a book helps us to locate special information. When our time is limited, we can read the chapter which tells us the special information we need; then we do not have to read the entire book."

"Many people go to the library to do research. Research means making a careful, diligent search about a specific item or topic. This Research Game should be fun to play in class." (See illustration III.)

"Now, a table of contents gives us an idea of where to look for specific information. But an index will help us to go directly to what we may need to know without having to waste a lot of time leafing through a book."

Using a Table of Contents

If you had to find information on the causes of thunderstorms, you would probably look in a science book. Suppose you found a book with this table of contents. Do you see anything that might help you?

1. Science All Around Us. 5
2. Day and Night 31
3. Light and Sound Waves 55
4. Heat from the Sun 79

5. Weather from Day to Day 101

6. Things to Try 133

Information on thunderstorms would probably be in Chapter 5, starting on page 101. The table of contents above is for a book that is organized in chapters, a book can be organized in different ways. It may be divided into units. Then each unit is divided into chapters or sections. Here is part of a table of contents from such a book. It shows the organization of the first unit and part of the second.

ONE PEOPLE IN COMMUNITIES 1

1. The Old Ways 3

2. The Changing Environment 9

3. Alike and Different 13

4. Adapting to Changes 18

5. Learning Cultural Traits 23

TWO COMMUNITIES IN DIFFERENT PLACES 31

When you pick up a book, look at the table of contents to see how the book is organized. It will save time when you are looking for something.

"An index is an alphabetical list of names or topics in a book. An index is much more detailed than a table of contents. Often topics and subtopics are listed together."

"An index gives a page number for each topic and subtopic listed. The subtopics are listed in alphabetical order too."

"Please turn to your English book, Patterns of Language; on page 71 and 72 you see a table of contents and index also. Let's compare the two. (A discussion follows) See illustration I again. (Students point out where various kinds of information will be found.)

"Let's look at the listing of subtopics under books. How many are listed? Why are two pages given after the subtopic reference?"

Instruction and Practice

"Before you look for information you may want to think about your subject. What do you want to know or learn? How will you use this information? Asking yourself questions will help you to organize the information you want."

"Here are some practice sheets to use. You will find that after completing these exercises you will feel at home when you select a topic for locating specific information. Just read the directions before each lesson carefully. I will be glad to answer any questions you have concerning the work. You can check your answers with the key in the back of your workbook to see if your answers are correct when you complete each exercise." (The students can complete each exercise in about five minutes and then check.)

Evaluation

Here is an excerpt from a reading workbook, Skills in Reading: Level B from Goals in Reading published by Harcourt Brace Javanovich, Inc., 1974 edition, which will serve as a test.

Have students read the terms in Index A, Index B, and Index C, Illustration V, next students should read the questions and write the word or words, giving the answers plus pages listed in these sample indexes.

Evaluation Test

1. Which index gives a reference about collecting? ____________________

2. In Index B, how many pages give information about rock layers? ______

3. In Index C, how many page references are given for non-porous rock? ____

4. Name three types of rocks listed in Index B: (More than three are given.) ____

5. Which pages in Index A have illustrations for metamorphic rocks? ____

6. Which index gives the most exact reference to the effects of water on rocks? ____________________

7. Which two indexes include cross-references? ____________________

8. In Index C, under what entry would you look to find out about rocks in layers? ____________________

Generalization and Transfer

Suppose a family needs a new car. People know that a car is a very expensive purchase. Most people spend a great deal of time searching for just the right car which will serve the family, give good mileage, not cost too much for upkeep, or need repairs too often. Many times, a person who is in the market for a new car, will go to the public library where he/she can look up special information about automobiles in a magazine, or periodical, called the Consumer Report. This magazine tells exactly which model of any make car is a better value for the money and why.

Mothers are always researching cook books for new recipes for new ideas for the family meal. An index is most helpful for locating this specific information. A mother may even look information regarding which brand of soap or which product washes clothes cleaner or what brand of carpet cleaner is more economical.

A boy or girl can even look in the *Consumer Report* to find out which ten-speed bicycle is safer, more economical and will have a longer lifetime. Many things can be learned by using a table of contents or an index.

Research can save a family money and bring much happiness when an item is really worth the investment.

Knowing how to look up specific information quickly can really save time.

From Patterns of Language Illustration I

Contents

1 Your Library 7
2 The Key 15
3 Fact and Fiction 22
4 Reference Books 27
5 More Reference Books 33
6 Pretty Is As Pretty Does 40
7 Periodicals 45
8 Do You Have to Write a Report? 51
9 Looking Ahead in the Library 56
10 Libraries Everywhere 62
Glossary 67
Index 71

FOLLOW THROUGH. Answer these questions, using the page of an index shown on page 147.

1. On which page could you find information about Melvil Dewey?
2. Which pages give information about Braille? What information can [illegible] on those pages?
3. What page tells you about copyright dates? Why is this information important?
4. What almanacs are discussed in this book? On what page are they referred to?
5. Which page deals with the card catalog? Which chapter would this be in? How do you know?

Contents page from *Libraries and You* by Pekay Shor, published by Prentice-Hall, Inc.

Index

Abridged, 42
Almanacs, 38
  Information Please, 38
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ENCYCLOPEDIAS

Encyclopedias are storehouses of information. A library contains at least one set of encyclopedias of recent copyright date. What is a copyright date? It is the year in which a book is published.

Index page from *Libraries and You* by Pekay Shor, published by Prentice-Hall, Inc.

e 11 2. pages 31, 64. These
is alphabetized and about
ge 43. This information is
ology books, science books,

history books, and so on; information in those fields changes or is updated constantly. 4. *Information Please* and *World* almanacs (page 38). 5. Page 15. Chapter 2 begins on page 15.

Contents (Illustration II)

1. Ice cream, Gingerbread, Cinnamon Buns, and Candy 11
2. Chocolate, Cocoa, and Cocoa Trees 14
3. The Mystery of Vanilla 24
4. Pepper - Black, White and Read 30
5. The Cinnamon Monsters 37
6. Little Nails from the Spice Islands 42
7. The Little Nut Tree 48
8. Mustard for Hot Dogs 54
9. Gingerbread and Ginger 60
10. The Most Expensive Spice in the World 64
11. Sugars from Plants, Trees, and Bees 70

Index 79

Research Game (Illustration III)

"We can play a Research Game today if you would like.

Please select a non-fiction book from the classroom library. Then on your paper write ten questions which could be answered by referring to the Table of Contents or Index." (allow ten minutes)

Give ten points to the researcher who finishes first, nine to the second, etc. All players get one point for each correct answer. Pass books and questions back to owner after they are exchanged. The owners will correct and score.

From Bookmark Reading Program Skillsbook

Unit 7 Sources of Information

PRACTICE EXERCISE 1

One part of a table of contents is shown below. It shows the title of one chapter in a science book and the subheadings in that chapter. Look it over and then answer the questions that follow. (In doing this exercise and some of those that follow, you will find some special words that you may not know. You can find most of these words in the Glossary. However, you do not need to know the meaning of all the words in order to do the exercises.)

STORIES THAT ROCKS TELL	210
Rocks Formed by Heat	211
Hot Springs and Geysers	220
Things You Can Do	223
Sedimentary Rocks	224
Studying Sedimentary Rocks	228
How Rocks are Changed	229
Some Things to Do	232
Great Glaciers	233
Things to Remember	237

1. To what page would you turn for a general statement about the chapter?

   ____

2. What is the name of the section that would tell about the relationship between hot springs and geysers? ____________________

3. If you had started a rock collection, where might you find information on experiments you could do with them? ____________________

4. You have reason to think that some rocks are sedimentary. Where would you look to find more information about them? ____________________

5. Where would you turn for a summary of the chapter? ____________________

Illustration IV

Here are parts of the indexes from three different books. Each part includes the entry for rocks. Notice the ways the different idexes are set up. Then answer the questions that follow. (see Evaluation Test).

Index A

(Numbers in underlined type refer to illustrations.)

rocks, 4,4,7, 346, 347, 347; erosion of, 6, 6, 7, 7, 8, 9, 31, 32, 352; extrusive, 347, 349; igneous, 36, 36, 37, 39, 347-51, 384, 349, 350, 351, 354; intrusive, 347, 349; kind of, 346; metamorphic, 41, 41, 356-57, 357; sedimentary, see sedimentary rock

Index B

Rocks

folded, 229-231; 232
how they are changed, 229-231; 237
igneous, 211-219; 222; 223; 226; 237
layers, 225-227
metamorphic, 230-231; 237
molten, 211-212; 215-218; 219; 237
sedimentary, 224-228-237

Index C

Rock: always changing, 83-84; arranged in layers (see also Rock, sedimentary), 109-110; baked, 164-165; broken by waves, 89; carried by glaciers 67, 68; changed by plants, 79-80; changed into soil, 80; cracked by sun's heat (with experiment), 74-75; cut away by water, 62; dissolved in water, 55; flows under pressure, 131; igneous, 14, 14, 147, 149, 152-154; made minerals, 49; materials from soil, 82; melted by heat 137; metamorphic, 164-16; molten, 138; non-porus, 3, 41, 43, 46; porous, 33, 43; sedimentary, 115-118, 120, 12, 134, 140, 164; split by plants 78; volcanic, 145, weather.

Lesson Plan

Scope

This lesson plan teaches the important skill of writing and reading short-form words in Braille. It is advantageous for the student to learn this skill of both reading and writing simultaneously. Writing exercises can be drawn from the words utilized in the lesson being taught.

Objective 5.3.2

The student will identify short-form words in braille writing. Given a list of 76 words in full spelling, the student will be able to write correctly in braille the short-form word for each with 100% accuracy for 3 consecutive days.

Initial Presentation

Enthusiastically tell the students it is time to work on braille writing. Remind the children that braille, as officially approved, comprises two grades. Grade 1 braille is in full spelling and consists of the letters of the alphabet, numbers, punctuation, and a number of composition signs which are special to braille. Grade 2 braille consists of Grad 1 and 189 contractions and short-form words, and should be known as "English Braille." One grade of braille is merely a continuation of the other, but with variations in rules. Tell the students that Grade 2 English Braille is the official international system of Braille. Explain to children that since, for their meaning, braille characters must depend upon the position of the dots in the cell, as well as the number of dots present, it is essential that they learn by space relationship what position any dot, or group of dots, occupies. Remind the students that they should know the braille alphabet, numbers, and most of the punctuation and composition signs. Also, tell them that they are skilled in writing many of the braille contractions. "Now we are ready to work on a new skill in braille writing - learning and using short-form words." Explain to the students that in addition to contractions, English Braille contains a total of 76 short-form words. These are abbreviated forms of the words they represent and begin with the same letter or contraction as the complete word. In other words, "They are short ways of writing long words. They also can be used alone or as part of a word. These words have been grouped together in order to facilitate learning through association. Guide students to realize that by using short-form words they will be able to write faster, and that less space will be required than for spelled out words, e.g., little (ll) and necessary (nec.) Tell the students that you are aware that they already know some of the short-form words, but that now they are ready to learn and use all 76 of them. Have children get their braille writers and paper, then read and explain the objective, including the mastery criteria, to them. Let the students copy the objective from dictation, and tell them to keep it in their notebook. Emphasize that they are going to learn all 76 of the short-form words and use them in their writing activities.

State the 9 parts of the rule pertaining to writing short-form words, and include examples. Short-form words should be used alone or as part of a word, e.g., acly (accordingly); (be) ss (besides); undcvd (undeceived); fstly (firstly); belld, (belittled). Underlined letters indicate the abbreviations for short-form words which are used in the braille writing of the word.

a. Short-form words must not be divided at the end of a line, but they may be separated from any syllable addition, e.g., imm-ly, not im-mly (immediately); percv, not per-cv (perceive).

b. A short-form word should be used as a whole proper name only, e.g., Louis Brl, (Braille); Thomas Ll, (Little); but not Hapgd, (Hapgood); Dooll, (Doolittle).

Note: Short-form words which are common words are not to be considered as proper names when they appear in names of books, articles, chapter headings, publishers' names, etc. e.g., Children's Press, MY FRIENDLY ENEMY.

c. An addition may be made to a short-form word provided it does not result in incorrect spelling.

d. An addition may be made to a short-form word only if it retains its original meaning and would not obscure recognition of the work. e.g., "must" in mustn't, but not in mustache. use after in aftermath, but not in rafter.

e. preconceive, not preconcv; pre-concv, not pre-concv. Since the contraction for "con" cannot be used in the middle of a word, the short-form word "conceive" should not be used if a prefix appears before it, e.g., misconceived, preconceived. However, it should be used when the word is divided, e.g., mis-conceived, pre-conceived

f. an addition may be made to a short-form word provided the combination could not be mistaken for, or have the appearance of, another word. The short-form words for "after," "blind," or "friend" should not be used when followed by a vowel, e.g., afterimage, aftereffect, blindage, blinded, blinder, blindest, friended, befriended. However, they may be used when followed by a consonant, or a hyphen in a divided word., e.g., blind-ed, befriend-ing; after-image, afterbirth, blindness, friendly.

g. A short-form word must not be used if it would cause confusion in pronunciation or in the recognition of an unusual word. e.g., stirabout (a porridge), not stirab; Port Said, not Port Sd.

h. The apostrophe should always be inserted in the exclamation "h'm!" (hm!) to distinguish it from the short-form word for "him", hm .

i. When the proper names "Al" or "Ab" appear at the beginning of a sentence, they should be preceded by the letter sign to distinguish them form the short-form words for also (al) or about (ab).

Provide the students with a complete list of all short-form words. Tell them to study the rule and the list of 76 words. Ask the students to explain each part of the rule to you with the examples. Reinforce students' responses and attending behavior.

Complete List of Short-form Words

about ab
above abv
according ac
across acr
after af
afternoon afn
afterward afw
again ag
against ag(st)
almost alm
already alr
also al
although al(th)
altogether alt

deceive dcv
deceiving dcvg
declare dcl
declaring dclg
either ei
first f(st)
friend fr
good gd
great grt
herself h(er)f
him hm
himself hmf
immediate imm
its xs

always alw

because (be)c

before (be)f

behind (be)h

below (be)l

beneath (be)n

beside (be)s

between (be)t

beyond (be)y

blind bl

braille brl

children (ch)n

conceive (con)cv

conceiving (con)cvg

could cd

receive rcv

receiving rcvg

rejoice rjc

rejoicing rjcg

said sd

should (sh)d

such s(ch)

themselves (the)mvs

thyself (th)yf

itself xf

letter lr

little ll

much m(ch)

must m(st)

myself myf

necessary nec

neither nei

o'clock o'c

oneself (one)f

ourselves (ou)rvs

paid pd

perceive p(er)cv

perceiving p(er)cvg

perhaps p(er)h

today td

together tgr

tomorrow tm

tonight tn

would wd

your yr

yourself yrf

yourselves yrvs

Instruction and Practice

Provide the students with a practice session. Allow about 5 minutes practice time for each of the 9 rules. The students are given several words to read and write. Have children write the full spelling and the short-form for each word. While children are writing, check with each one individually to see if they are having difficulty, and provide them with corrective feedback. Call attention to what is meant by short-form words, and remind students that they will gain speed in writing by using short-form words. When they complete this practice session, review the correct answers. Let the students use the list of short-form words during the initial practice sessions.

Provide the students with another practice session in writing braille short-form words. Feedback procedures should be given as described previously. Have students use the list of short-form words. Provide as many practice sessions as needed similar to the above, but gradually remove the list of words. Review the 9 part rule in writing braille short-form words before each practice session. Continue to provide appropriate knowledge of results and reinforcement.

Oral and written recitation activities must be incorporated into instruction and practice. The activities should include braille short-form word lists, oral questions and use of Braille Drill books available from American Printing House. Students should be asked to write and explain braille short-form words. No sample list or help can be used during this recitation. Continue to provide corrective feedback and reinforcement during recitation. Students should continue to review and practice reading and writing all 76 short-form words listed in their Braille Drill books.

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Sample Practice

Directions: Copy the following list of words in column form, and after each word write the short-form word for each.

about
afternoon
already
because
between
children
either
good
immediate
much
paid
said
together

according
again
altogether
below
blind
could
first
great
letter
must
quick
receive
would

across
almost
always
beside
braille
declare
friend
him
littlw
necessary
perhaps
themselves

Evaluation

The initial presentation and instruction and practice activities described above will probably take several days to complete (25 minutes per day). Obviously, it will take some students a longer period of time than other students to learn and use this skill. When the students are completing the activities with few errors, begin to evaluate the objective. Evaluation should take one class period. (55 Minutes) The evaluation will consist of 76 braille short-form words spelled out for 3 consecutive days. Oral instructions will be provided for students.

Generalization and Transfer

Reinforce the students for achieving the objective. Review the 9 parts of the rule pertaining to writing braille short-form words. Tell the students they will be tested again on writing braille short-form words in a couple of weeks. Specify that you want them to be able to write with speed and accuracy all 76 short-form words independently and to verbally state the rule governing the usage of short-form braille words. Review the criteria of a list of 76 braille short-form words in full spelling with 100% accuracy for 3 consecutive days. Give the students a practice test. Plan half the practice time it took for original practice session learnings. The materials and activities should be different from the activities used for acquisition. Possible activities include:

1. Writing braille short-form words in homework assignments.
2. Writing braille short-form words in spelling units.
3. Writing braille short-form words in making notes.
4. Using braille short-form words in writing announcements.

Evaluate for retention after these practice sessions.

The objective of this lesson plan has 2 transfer tasks. First, student should be able to write braille short-form words in all other areas. Second, student should be able to use braille short-form words in day to day writing activities. Example of activities include: writing experience stories, writing letters to friends and pen pals, and writing descriptive reports on field trips. Describe the overlap between the old and the new tasks. Stress that children need to learn and use braille short-form words in all day to day written activities, as well as in all required written activities. Remind students that by using braille short-form words, they are choosing the short, faster way to write long words.

Sample Test

Directions: Write the following words. Beside each, write the short-form for the word.

about
according
after
afterward
against
already
although
always
before
below
beside
much
myself
neither
oneself
paid
perceiving
quick

beyond
braille
conceive
could
deceiving
declaring
first
good
herself
himself
receiving
rejoicing
should
themselves
today
tomorrow
would
yourself

above
across
afternoon
again
almost
also
altogether
because
behind
beneath
little
must
necessary
o'clock
ourselves
perceive
perhaps
receive

blind
children
conceiving
deceive
declare
either
friend
great
him
immediate
rejoice
said
such
thyself
together
tonight
your
yourselves

Lesson Plan

Scope

The following lesson plan teaches the learner to write a root word and to add a designated prefix.

Objective

When presented with a stimulus root word and the examiner requests the student to write the same root word adding a designated prefix, the student will correctly write the requested word. This task will be performed for 14 of 15 different prefix additions.

Initial Presentation

Read and explain the objective, including the mastery criteria, to the students.

Say to the pupils, "You already know what a suffix is. Who can tell what a suffix is?" Students should say that a suffix is one or more letters added to the end of a word to change its meaning. Ask for examples. The following might be given. Ed added to rake becomes raked. Ly added to free becomes freely. Ful added to power becomes powerful.

Say to the class, "Now perhaps someone would like to define a prefix." It may be that no one in the class can define a prefix. If so, give the following definition to the pupils. A prefix is one or more letters added to the beginning of a root word to change its meaning.

Say to the pupils, "There are many prefixes, but during the next few days we are going to learn about four prefixes. The are un-, im-, re-, and dis-. I want you to write down on your paper what each of these prefixes means. Un- means not. Im- means not. Re- means back or again. Dis-means from, down, or away. Now that you've written the meaning of the prefixes on your paper let's go over them."

Call out each prefix allowing the students to give the meaning of each. Review these several times until the students have a fairly good understanding of them.

Say to the pupils, "If we take the root word happy and add the prefix un- to it, what new word will we have?" Students should say unhappy.

Ask the pupils, "What does unhappy mean?" Students should say not happy. Use the same procedure for able, armed, like, and broken. Give the students an opportunity to make oral sentences with the new words they have formed. Reinforce correct responses.

Use the same procedure for the remaining three prefixes as for un-. For the prefix im-,use the words passable, patient, polite, and pure. For the prefix re-, use the words call, new, join, and trace. For the prefix dis-, use the words agree, appear, bank, and favor. Give the students an opportunity to offer any words that they might know containing the new prefixes. Correct any errors and reinforce responses.

Instruction and Practice

Provide each student with a worksheet either in braille or large print. The worksheet should contain 30 words containing prefixes. On the blank next to the word on the large print worksheet the student should write the prefix. The students using braille should write the prefix on a separate sheet of paper numbering each accordingly. (See attached worksheet #1.) While the students are completing the worksheet, walk around the room providing corrective feedback. After all students have completed the worksheet, review the correct answers. At the same time review the meaning of the prefixes. Let the students give the meaning of the words on the worksheet.

Provide the students with a worksheet in braille or large print to form new words from a root word plus the meaning of the prefix. (See attached worksheet #2.) Braille answers should be written on a separate sheet of paper. Feedback procedures should be given as described previously.

Provide the students with a worksheet containing 10 root words. Students should rewrite the words adding a specific prefix to each word. Worksheets should be in braille or large print as needed. Feedback procedures should be given as described previously. (See attached worksheet #3.)

Evaluation

The initial presentation and instruction and practice activities will probably take 4 to 5 days to complete. When the students are able to complete the worksheets without any errors, evaluation of the objective should be begun. See evaluation test attached.

Generalization and Transfer

Students should be able to apply the prefixes to words that they have not encountered during the practice sessions. They should also be able to spell the new words made by adding prefixes. Plan activities where students would use words containing prefixes learned. Students might write sentences using spelling words, write friendly letters, do some creative writing, and answer questions in reading and social studies.

Worksheet #1

Here are words which have prefixes. Write the prefix on the blank next to the word.

1. replace ____________
2. uncommon ____________
3. disfavor ____________
4. refill ____________
5. improper ____________
6. review ____________
7. imperfect ____________
8. dismount ____________
9. rejoin ____________
10. dislike ____________
11. respond ____________
12. disloyal ____________
13. impossible ____________
14. rebound ____________
15. unfasten ____________
16. revolt ____________
17. regain ____________
18. refund ____________
19. imprudent ____________
20. resign ____________
21. undo ____________
22. dishonest ____________
23. improbable ____________
24. impractical ____________
25. disobey ____________
26. unfair ____________
27. reform ____________
28. disgrace ____________
29. distrust ____________
30. restore ____________

Worksheet #2

Change the meaning of the words in the first column to the meanings in the second column by adding prefixes.

Root Word	New Meaning	New Word
1. consider	consider again	____________
2. paid	paid back	____________
3. personal	not personal	____________
4. true	not true	____________
5. continue	stop	____________
6. real	not real	____________
7. happy	not happy	____________
8. partial	not partial	____________
9. wise	not wise	____________
10. arm	take away arms	____________
11. count	count over again	____________

Worksheet #3

Rewrite each root word adding the assigned prefix.

1. certain + un = ____________________
2. satisfied + dis = ____________________
3. moderate + im = ____________________
4. prove + im = ____________________
5. appear + dis = ____________________
6. view + re = ____________________
7. expected + un = ____________________
8. place + re = ____________________
9. reasonable + un = ____________________
10. regard + dis = ____________________

Test for Prefixes

Rewrite each root word adding the assigned prefix.

1. store + re = ____________________

2. miss + dis = ____________________

3. proper + im = ____________________

4. polite + im = ____________________

5. necessary + un = ____________________

6. fair + un = ____________________

7. practical + im = ____________________

8. form + re = ____________________

9. obey + dis = ____________________

10. trust + dis = ____________________

Lesson Plan

Scope

This lesson plan is designed to teach the spelling principle for changing a root when adding a suffix beginning with a vowel and is limited to vert roots and the ing inflectional suffix.

Objective

Given a list of 30 verbs, the student will be able to correctly add the ing inflectional suffix in 5 minutes with 100% accuracy for 3 consecutive days.

Initial Presentation

Get the students' attention by using a prearranged signal, e.g., ringing a bell or writing the objective on the board. Enthusiastically tell them it is time to work on spelling. Tell the students to get out their spelling notebooks. Reinforce appropriate behavior with verbal praise, e.g., "Bill's ready to work on spelling."

Read and explain the objective, including the mastery criteria, to the students. Have the students copy the objective in their notebooks. Emphasize that they are going to learn how to add ing to verbs.

State the three parts of the rule pertaining to: words where roots are not changed, words ending in -e, and words ending in a single vowel followed by a single consonant. Show an overhead of these three parts of the rule (See Table 4-3). Review the examples on the overhead. Call attention to the spelling of doing, coming, and getting. Ask *several* students to explain the three ways one can spell *ing* endings on words. Have the students copy the overhead, including the examples, for future reference. Call the students' attention to the teaching chart displayed in the room (See Table 4-4). Describe how this chart illustrates how to use the three parts of the rule. Point out that the *e* in the verbs ending in *e* is red. Also point out that in verbs ending with a single vowel followed by a single consonant that the vowel is green and the consonant is blue. Ask *several* students to explain how to use this chart. Reinforce students' responses and attending behavior.

Instruction and Practice

Provide a separate 2 minute practice session for each of the three parts of the rule. Have a separate worksheet of 10 examples for each part. The examples should be color coded in the same way as the worksheet. While the students are completing each worksheet, walk around the room providing corrective feedback. After the students complete each 2 minute practice session, review the correct answers. Have students tell why certain answers are correct or incorrect. Let the students use the information copied in their notebooks or the information on the teaching chart to help obtain the correct answer during these initial practice sessions.

Provide a 5 minute practice session for all three parts of the rule at the same time. Have a worksheet with 30 examples. The worksheet should be color coded as before. Feedback procedures should be given as described previously. Provide two more practice sessions as described above, but gradually fade the prompts and models (*i.e.*, the use of the teaching chart and information in the notebooks) and the color coded examples. Review and illustrate the rule before each practice session. Continue to provide appropriate knowledge of results and reinforcement.

Oral and written recitation activities are be incorporated into instruction and practice. The activities should include worksheets, oral questions, and games. Students should be asked to write and say the three parts of the rule and practice using the rule to spell verbs ending in _ing_. A spelling bee on verbs ending in _ing_ could be held. No prompts or models can be used during recitation. Approximately 12 different recitation activities should be used. Continue to provide corrective feedback and reinforcement during recitation.

Evaluation

The initial presentation and instruction and practice activities described above will probably take 4 to 5 days (20 minutes per day) to complete. When the students are completing the recitation activities without any errors, begin to evaluate the objective. The evaluation will take 5 minutes a day for 3 consecutive days. See Table 4-5 for a sample evaluation sheet.

Reinforce the students for achieving the objective. Review the three parts of the rule pertaining to words where roots are not changed, words ending in -e, and words ending in a single vowel by a single consonant. Show the overhead of these three parts of the rule (See Table 4-3). Tell the students they will be tested on these rules again in another week. Specify that the students should be able to: (1) write the three parts of the rule and (2) use the rule on the list of 30 verbs. Review the criterion of 100% accuracy in a 5 minute test period. Tell the students they will be given extra time on the test to write the three parts of the rule. Give the students a practice test. Plan five additional 20 minute practice sessions (it took ten 20 minute practice sessions for original learning). The materials and activities should be different from the activities used for acquisition. Possible activities include:

1. Table games where the students must use the parts of a rule (_e.g._, students must use the rule to add _ing_ to a verb before moving his man in checkers).
2. Challenge matches where two students try to stump each other
3. Timed worksheet drills to improve rate of response.
4. Structured recall worksheets in the same form as the retention test.

Evaluate for retention after the fifth additional 20 minute practice session. Give the students a ten minute break during the administration of the test.

Generalization and Transfer

The objective and scope of this spelling lesson plan has two transfer tasks. First, students should be able to apply the rule to verbs not listed on the original study list. Second, students should be able to apply the rule in their day-to-day spelling activities. Provide students with a list of 30 new verbs. Construct practice activities and materials like those used for acquisition teaching. This makes the required responses and stimuli very similar, and creates a maximum positive transfer situation. Tell the students about this overlap. Point out how the students can use the three parts of the rule they have learned with these new verbs. Give some examples. Help them sort the new list of verbs into three groups (one group for each part of the rule).

Plan at least five additional 20 minute practice sessions for these new verbs. Continue to apply the criterion of 100% accuracy in a 5 minute time period.

Plan from five to ten practice activities that will require the students to use the rule in day-to-day activities. Possible activities include:

experience stories, short letters home, writing answers to questions about their reading lesson, filling out job applications, etc. Design these activities to have high positive transfer. As before, describe the overlap between the old and new tasks. Stress the need to learn how to use the rule in new situations.

Table 4-3

Sample Overhead of Spelling Rule

ING VERB ENDINGS

Add ing to most verbs	If a verb ends with e, drop the e before adding ing.	If a verb ends with a single vowel followed by a single consonant, double the last consonant and add ing.
do----doing call----calling find----finding	come----coming give----giving have----having	get----getting run----running shop----shopping

Table 4-4

Sample Teaching Chart

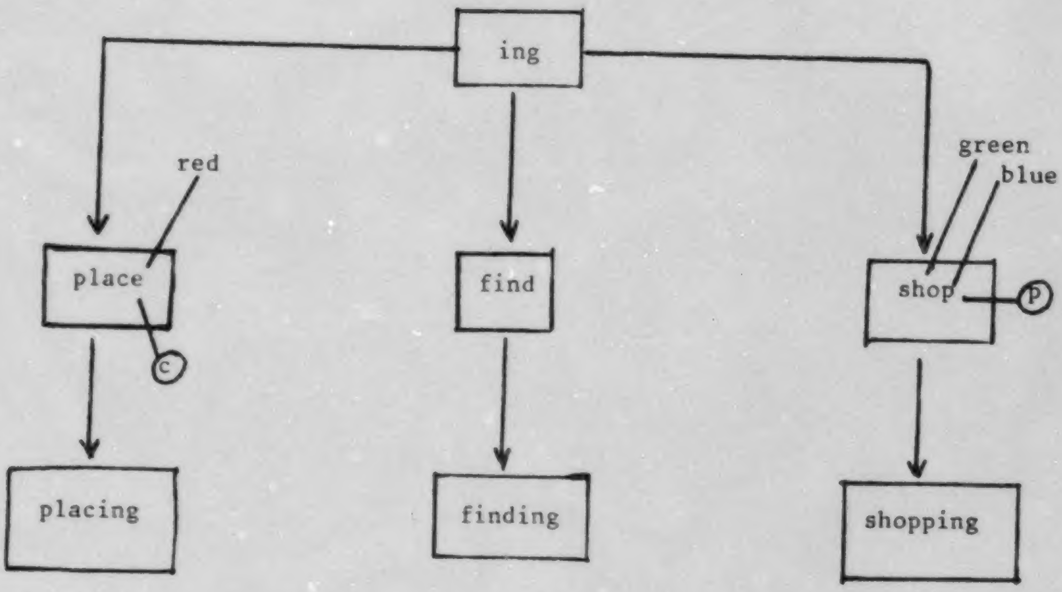
ing
red
green
blue
place
c
find
shop
p
placing
finding
shopping

Table 4-5

Sample Evaluation Sheet

Directions: Add ing to the following words, making any changes necessary.

1. love____________
2. swim____________
3. go____________
4. like____________
5. quit____________
6. help____________
7. live____________
8. trap____________
9. have____________
10. hold____________
11. give____________
12. plan____________
13. jump____________
14. face____________
15. trip____________
16. vote____________
17. print____________
18. hit____________
19. skate____________
20. spell____________
21. rise____________
22. hug____________
23. shoot____________
24. use____________
25. rub____________
26. smoke____________
27. sell____________
28. shake____________
29. shut____________
30. pick____________

CHAPTER SEVEN

THE READING DOMAIN

Broad Skills, Enabling Skills, Specific Skills, and Record Sheet
Reading Domain

Level	Pre Test	Post Test	(1) VOCABULARY		Pre Test	Post Test	(2) WORD ANALYSIS		Pre Test	Post Test	(3) COMPREHENSION		Pre Test	Post Test	(4) ORAL READING	
0	___	___	0.1.1	Words Relating to Pictures	___	___	0.2.1	Aud. Discrimination (words)	___	___	0.3.1	Following Directions	___	___	0.4.1	Tell Story Orally Using a Picture Book
	___	___	0.1.2	Positional Vocabulary	___	___	0.2.1.1	Sound vs No Sound	___	___	0.3.2	Classifying				
	___	___	0.1.2.1	Using People	___	___	0.2.1.2	Common Sounds	___	___	0.3.3	Recall Details				
	___	___	0.2.2.2	Using Objects	___	___	0.2.1.3	Sound Boxes	___	___	0.3.4	Sequence				
	___	___	0.1.3	Vocabulary Language Concepts	___	___	0.2.1.4	Unrelated Sounds	___	___	0.3.5	Cause & Effect				
					___	___	0.2.2	Visual Discrimination (Words)	___	___	0.3.5.1	Cause				
					___	___	0.2.2.1	Geometric Shapes	___	___	0.3.5.2	Effect				
					___	___	0.2.2.2	Clock Pictures	___	___	0.3.6	Main Idea				
					___	___	0.2.2.3	Letter Forms	___	___	0.3.7	Inference				
					___	___	0.2.3	Write ABC's	___	___	0.3.8	Prediction				
					___	___	0.2.3.1	Recite Alphabet								
					___	___	0.2.3.2	Mark Letter Heard								
1	___	___	1.1	Visual Discrimination (Likenesses in Word Forms)	___	___	1.2.1	Aud. Discrimination (Rhyming)	___	___	1.3	Sequence				
					___	___	1.2.1.1	ook, an								
					___	___	1.2.1.2	ake, at								
					___	___	1.2.2	Beginning Consonants								
					___	___	1.2.2.1	m, b, f								
					___	___	1.2.2.2	s, t, c								
					___	___	1.2.2.3	[illegible], d, r								

Level	Pre Test	Post Test	(1) VOCABULARY		Pre Test	Post Test	(2) WORD ANALYSIS		Pre Test	Post Test	(3) COMPREHENSION		Pre Test	Post Test	(4) ORAL READING	
2	____	____	2.1	Pre-Primer Sight Vocabulary	____	____	2.2.1	Rhyming Elements	____	____	2.3	Sequence	____	____	2.4	Read Aloud Last Story In 3rd Pre-Primer
					____	____	2.2.1.1	ar, ed, ate	____	____	2.3.1	2 Sentences				
					____	____	2.2.1.2	ee, en, og	____	____	2.3.2	3 Sentences				
					____	____	2.2.2	Beginning sounds								
					____	____	2.2.2.1	z, w, g								
					____	____	2.2.2.2	k, y, j								
					____	____	2.2.2.3	v, l, n, p								
3	____	____	3.1	Primer Sight Vocabulary	____	____	3.2.1	Rhyming Words	____	____	3.3.1	Sequence	____	____	3.4	Read Aloud From Primer
					____	____	3.2.2	Beginning Consonants	____	____	3.3.2	Recall Details				
					____	____	3.2.2.1	b, p, d, n, w, m	____	____	3.3.3	Main Idea				
					____	____	3.2.2.2	r, h, f, l, k, g								
					____	____	3.2.2.3	j, v, y, z, t, s, c								
	____	____	4.1	First Reader Sight Vocabulary	____	____	4.2.1	Final Consonants	____	____	4.3.1	Sequence	____	____	4.4	Read Aloud From First Reader
					____	____	4.2.2	Rhyming Words	____	____	4.3.2	Recall Details				
					____	____	4.2.3	Beginning Consonants	____	____	4.3.3	Main Idea				
					____	____	4.2.3.1	b, m, f, s, t, h, c, d, r	____	____	4.3.4	Cause & Effect				
					____	____	4.2.3.2	y, w, g, k, z, j, v, l, n, p	____	____	4.3.4.1	Cause				
									____	____	4.3.4.2	Effect				
									____	____	4.3.5	Inference				
									____	____	4.3.6	Prediction				

Level 4 (Cont'd)

Level	Pre Test	Post Test	(1) VOCABULARY		Pre Test	Post Test	(2) WORD ANALYSIS		Pre Test	Post Test	(3) COMPREHENSION		Pre Test	Post Test	(4) ORAL READING	
4									____	____	4.3.7	Comparison and Contrast				
									____	____	4.3.7.1	Comparison				
									____	____	4.3.7.2	Contrast				
5	____	____	5.1.1	Dolch Basic Word List	____	____	5.2.1	Suffixes	____	____	5.3.1	Sequence	____	____	5.4	Read Aloud From Second Reader, 1st Level
	____	____	5.1.2	Synonyms in Context	____	____	5.2.2	Final Consonants	____	____	5.3.2	Context Clues				
	____	____	5.1.3	Compound Words	____	____	5.2.3	Digraphs	____	____	5.3.3	Main Idea				
	____	____	5.1.4	Contractions	____	____	5.2.4	L & S Vowels	____	____	5.3.4	Cause & Effect				
									____	____	5.3.4.1	Cause				
									____	____	5.3.4.2	Effect				
6	____	____	6.1.1	Multiple Meanings	____	____	6.2.1	Root Words	____	____	6.3.1	Supply Endings	____	____	6.4	Read Aloud From Second Reader, 2nd Level
	____	____	6.1.2	Antonyms in Context	____	____	6.2.2	Cons. Blends	____	____	6.3.2	Details/Inference				
					____	____	6.2.3	Digraphs	____	____	6.3.3	Main Idea				
					____	____	6.2.4	L & S Vowels R-Controlled	____	____	6.3.4	Comparison & Contrast				
					____	____	6.2.5	Vowels (Aud.)	____	____	6.3.4.1	Comparison				
									____	____	6.3.4.2	Contrast				
7	____	____	7.1.1	Multiple Meanings	____	____	7.2.1	Syllabication	____	____	7.3.1	Inference	____	____	7.4	Read Aloud From Second Reader, 2nd Level
	____	____	7.1.2	Homonyms in Context	____	____	7.2.2	Affixes	____	____	7.3.2	Skim for Details				
					____	____	7.2.3	2-letter Blends	____	____	7.3.3	Main Idea				
					____	____	7.2.4	Vowel Diphthongs Vowel Digraphs	____	____	7.3.4	Sequence				
									____	____	7.3.5	Cause & Effect				

Level 7 (Cont'd)

Level	Pre Test	Post Test	(1) VOCABULARY	Pre Test	Post Test	(2) WORD ANALYSIS	Pre Test	Post Test	(3) COMPREHENSION	Pre Test	Post Test	(4) ORAL READING
7							____	____	7.3.5.1 Cause			
							____	____	7.3.5.2 Effect			
							____	____	7.3.6 Inference			
							____	____	7.3.7 Prediction			
							____	____	7.3.8 Comparison & Contrast			
							____	____	7.3.8.1 Comparison			
							____	____	7.3.8.2 Contrast			
8	____	____	8.1.1 Multiple Meanings in Context	____	____	8.2.1 Syllabication	____	____	8.3.1 Distinguish Fact from Opinion	____	____	8.4 Read Aloud From 4th Reader
	____	____	8.1.2 Synonyms, Antonyms, Hymonyms	____	____	8.2.2 Prefixes by Definitions	____	____	8.3.2 Comparison & Contrast			
	____	____	8.1.3 Classifying Words	____	____	8.2.3 Silent Letters	____	____	8.3.3 Recall Details			
				____	____	8.2.4 Phonic Principles Nonsense Words	____	____	8.3.4 Sequence			
							____	____	8.3.5 Cause & Effect			
							____	____	8.3.6 Main Idea			
							____	____	8.3.7 Inference			
							____	____	8.3.8 Prediction			
	____	____	9.1.1 Synonyms	____	____	9.2.1 Phonetic Symbols	____	____	9.3.1 Making Judgements	____	____	9.4 Read Aloud From 5th Reader
	____	____	9.1.2 Analogous Relationships	____	____	9.2.2 Root Words	____	____	9.3.2 Comparison & Contrast			
	____	____	9.1.3 Classifying Phrases	____	____	9.2.3 Nonsense Words	____	____	9.3.3 Main Idea (Outline)			

Level 9 (Cont'd)

Level	Pre Test	Post Test	(1) VOCABULARY		Pre Test	Post Test	(2) WORD ANALYSIS		Pre Test	Post Test	(3) COMPREHENSION		Pre Test	Post Test	(4) ORAL READING	
9									____	____	9.3.4	Details (Outline)				
									____	____	9.3.5	Sequence				
									____	____	9.3.6	Cause & Effect				
									____	____	9.3.7	Inference				
									____	____	9.3.8	Prediction				
10	____	____	10.1.1	Analogous Relationships	____	____	10.2	Meaning of Affixes	____	____	10.3.1	Cause & Effect	____	____	10.4	Read Aloud From 6th Reader
									____	____	10.3.2	Summaries				
									____	____	10.3.3	Inference				
									____	____	10.3.4	Comparison & Contrast				
									____	____	10.3.5	Outline				
									____	____	10.3.6	Graphic Materials				
									____	____	10.3.7	Mood of Story & Author's Intent				
11	____	____	11.1.1	Figurative Language	____	____	11.2.1	Word Anlysis Principles	____	____	11.3.1	Propaganda & Persuasion	____	____	11.4	Read Aloud From 7th Reader
	____	____	11.1.2	Homonyms, Synonyms & Antonyms	____	____	11.2.2	Multiple Meanings & Multiple Pronunciations	____	____	11.3.2	Time Relationships				
	____	____	11.1.3	Context C					____	____	11.3.3	Summaries				
	____	____	11.1.4	Analogous Relationships					____	____	11.3.4	Cause & Effect				
	____	____	11.1.5	Dictionary					____	____	11.3.5	Inference				
									____	____	11.3.6	Comparison & Contrast				

Level 11 (Cont'd)

Level	Pre Test	Post Test	(1) VOCABULARY	Pre Test	Post Test	(2) WORD ANALYSIS	Pre Test	Post Test	(3) COMPREHENSION	Pre Test	Post Test	(4) ORAL READING
11							_____	_____	11.3.7 Outline			
							_____	_____	11.3.8 Graphic Materials			
M.O.				Pre Test __________	Post Test __________	END GOAL						

TAXOTOMY OF GOALS AND OBJECTIVES

READING DOMAIN

END GOAL

0.0 The learner will draw conclusions, both stated and inferred; identify character traits, cause and effect relationships, the mood of a story, the author's intent; and identify a correct outline for an article.

Given a story and ten (10) questions with four (4) choices, the learner will select the correct answer to each question.

and

Given an article and three (3) variations of an outline, the learner will select the correct outline for the article.

Minimum: 9 Part I
1 Part II

LEVEL 0

0.1.1 The learner will demonstrate general vocabulary concepts.

Given ten (10) dictated words with three (3) pictures for each, the learner will circle the picture for the word dictated.

Minimum: 9

0.1.2 The learner will demonstrate knowledge of positional vocabulary concepts.

Given eighteen (18) dictated phrases with three (3) pictures for each, the learner will circle the picture for each positional concept.

Minimum: 16

0.1.2.1 The learner will demonstrate knowledge of positional vocabulary concepts on the concrete level.

Given eighteen (18) dictated phrases, the learner will physically demonstrate each positional concept.

Minimum: 18

0.1.2.2 The learner will demonstrate knowledge of positional vocabulary concepts on the semi-concrete level.

Given eighteen (18) dictated phrases, the learner will demonstrate with blocks each positional concept.

Minimum: 18

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0.1.3 The learner will demonstrate recognition of general language concepts.

Given ten (10) dictated phrases with three (3) pictures for each, the learner will circle the picture for each language concept.

✓ Minimum: 9

0.2.1 The learner will auditorily discriminate likenesses and differences in words.

Given ten (10) pairs of dictated words, the learner will indicate by touching his chin whether each pair is alike or different.

Minimum: 9

0.2.1.1 The learner will identify sounds as opposed to sound.

Given five (5) sounds of equal magnitude, the learner will respond by raising his hands when he hears the sound.

Minimum: 5

0.2.1.2 The learner will identify common sounds.

Given five (5) sounds, the learner will circle the picture of the object that makes the sound.

Minimum: 4

0.2.1.3 The learner will match sounds.

Given eight (8) sound boxes, the learner will pair the boxes which have the same sound.

Minimum: 8

0.2.1.4 The learner will auditorily discriminate differences in unrelated sounds.

Given five (5) pairs of sounds, the learner will circle the picture of the boy with his hands up if the sounds are alike and circle the picture of the boy with his hands down if the sounds are different.

Minimum: 5

0.2.2 The learner will visually discriminate between words.

Given ten (10) word pairs, the learner will circle the pairs which have identical words.

Minimum: 9

0.2.2.1 The learner will visually discriminate between geometric shapes.

Given five (5) geometric shapes, the learner will place each one by the matching shape on a worksheet.

Minimum: 5

0.2.2.2 The learner will visually discriminate between clock pictures.

Given five (5) clock pictures, the learner will place each one by the matching picture on a worksheet.

Minimum: 10

0.2.2.3 The learner will visually discriminate between letters.

Given ten (10) letter symbols, the learner will place each one by the matching symbol on a worksheet.

Minimum: 10

0.2.3 The learner will recall and write the upper and lower case letter symbol for each letter of the alphabet.

Given the letters of the alphabet dictated out of sequence, the learner will write the upper and lower case letter symbol for each.

Minimum: 18

0.2.3.1 The learner will recite the alphabet in sequence.

Given sixty (60) seconds, the learner will recite the alphabet.

Minimum: 26

0.2.3.2 The learner will recognize letter symbols.

Given thirty (30) dictated letters with four (4) choices for each, the learner will circle the letter dictated.

Minimum: 28

0.3.1 The learner will follow directions for a simple three-step task.

Given a different three-step (3) task on five (5) separate occasions, the learner will follow the directions to complete the task.

Minimum: 5

0.3.2 The learner will classify pictured objects.

Given five (5) rows of five (5) pictures each, the learner will circle the three (3) pictures in each row that are in the same category.

Minimum: 4

0.3.3 The learner will recall details from a sentence.

Given five (5) sentences with five (5) pictures for each, the learner will circle the two (2) pictures that answer a detail question.

Minimum: 4

0.3.4 The learner will sequence pictures in a logical order.

Given five (5) sets of three (3) pictures each, the learner will arrange the pictures so that they tell a story.

Minimum: 4

0.3.5 The learner will identify cause and effect relationships.

Given five (5) oral selections with three (3) pictures for each, the learner will circle the picture which answers a cause or effect question.

Minimum: 4

0.3.5.1 The learner will identify cause relationships.

Given five (5) oral selections with three (3) pictures for each, the learner will circle the picture which answers a cause question.

Minimum: 4

0.3.5.2 The learner will identify effect relationships.

Given five (5) oral selections with three (3) pictures for each, the learner will circle the picture which answers an effect question.

Minimum: 4

0.3.6 The learner will identify the main idea.

Given five (5) oral selections with three (3) pictures for each, the learner will circle the picture which shows the main idea.

Minimum: 4

0.3.7 The learner will make inferences.

Given five (5) oral selections with three (3) pictures for each, the learner will circle the picture which answers the inference question.

Minimum: 4

0.3.8 The learner will make predictions.

Given five (5) oral selections with three (3) pictures for each, the learner will circle the picture which answers the prediction question.

Minimum: 4

0.4.1 The learner will tell a story.

Given a short picture storybook, the learner will tell a story that includes the content of the pictures.

LEVEL 1

1.1 The learner will visually discriminate likenesses in word forms.

Given fifteen (15) rows of words, the learner will circle the word in each row that is identical to the first word.

Minimum: 14

1.2.1 The learner will auditorily discriminate words ending in the rhyming sounds, ook, an, ake, at.

Given ten (10) rows of four (4) pictures each, the learner will circle the picture in each row that rhymes with the first picture.

Minimum: 9

1.2.1.1 The learner will auditorily discriminate words ending in the rhyming sounds, ook, an.

Given ten (10) rows of four (4) pictures each, the learner will circle the picture in each row that rhymes with the first picture.

Minimum: 9

1.2.1.2 The learner will auditorily discriminate words ending in the rhyming sounds, ake, at.

Given ten (10) rows of four (4) pictures each, the learner will circle the picture in each row that rhymes with the first picture.

Minimum: 9

1.2.2 The learner will auditorily discriminate beginning consonant sounds of the letters, m, b, f, s, t, c, r, h, and d.

Given ten (10) rows of pictures, the learner will circle the two (2) pictures in each row that begin with the same sound.

Minimum: 9

1.2.2.1 The learner will auditorily discriminate beginning consonant sounds of the letters, m, b, and f.

Given ten (10) rows of pictures, the learner will circle the two (2) pictures in each row that begin with the same sound.

Minimum: 9

1.2.2.2 The learner will auditorily discriminate beginning consonant sounds of the letters, s, t, and c.

Given ten (10) rows of pictures, the learner will circle the two (2) pictures in each row that begin with the same sound.

Minimum: 9

1.2.2.3 The learner will auditorily discriminate beginning consonant sounds of the letters, h, d, and r.

Given ten (10) rows of pictures, the learner will circle the two (2) pictures in each row that begin with the same sound.

Minimum: 9

1.3 The learner will sequence the events from a story.

The learner will listen to a story. Given four (4) pictures in random order, the learner will place the pictures in the order that they happened in the story.

Minimum: 4

LEVEL 2

2.1 The learner will demonstrate recognition of basic pre-primer sight vocabulary.

Given forty (40) words, the learner will read each word aloud to the teacher.

Minimum: 36

2.2.1 The learner will auditorily discriminate the rhyming sounds, ar, ed, ate, ee, og, and en.

Given six (6) rows of four (4) pictures each, the learner will circle three (3) pictures in each row that rhyme.

Minimum: 6

2.2.1.1 The learner will auditorily discriminate the rhyming sounds, ar, ed, and ate.

Given three (3) rows of four (4) pictures each, the learner will circle three (3) in each row that rhyme.

Minimum: 3

2.2.1.2 The learner will auditorily discriminate the rhyming sounds, ee, og, and en.

Given three (3) rows of four (4) pictures each, the learner will circle three (3) pictures in each row that rhyme.

Minimum: 3

2.2.2 The learner will auditorily discriminate beginning consonant sounds of the letters, z, w, g, k, y, j. v, l, n, and p.

Given twelve (12) rows of four (4) pictures each, the learner will circle two (2) pictures in each row that begin with the same sound.

Minimum: 11

2.2.2.1 The learner will auditorily discriminate beginning consonant sounds of the letters, z, w, and g.

Given three (3) rows of four (4) pictures each, the learner will circle two (2) pictures in each row that begin with same sound.

Minimum: 3

2.2.2.2 The learner will auditorily discriminate beginning consonant sounds of the letters, k, y, and j.

Given three (3) rows of four (4) pictures each, the learner will circle two (2) pictures in each row that begin with same sound.

Minimum: 3

2.2.2.3 The learner will auditorily discriminate beginning consonant sounds of the letters, v, l, n, and p.

Given four (4) rows of four (4) pictures each, the learner will circle two (2) pictures in each row that begin with the same sound.

Minimum: 4

2.3 The learner will sequence sentences in a logical order.

Given two (2) sets of four (4) sentences, the learner will number the sentences in each set so that they tell a story.

Minimum: 8

2.3.1 The learner will sequence sentences in a logical order.

Given two (2) sets of two (2) sentences, the learner will number the sentences so that they tell a story.

Minimum: 4

2.3.2 The learner will sequence sentences in a logical order.

Given two (2) sets of three (3) sentences, the learner will number the sentences so that they tell a story.

Minimum: 6

2.4 The learner will read the third pre-primer level reader from a basic series.

The learner will read aloud to the teacher the last story from a third pre-primer level reader.

Word errors allowed: 2

LEVEL 3

3.1 The learner will demonstrate recognition of basic primer sight vocabulary.

Given fifty (50) words, the learner will read each word aloud to the teacher.

Minimum: 45

3.2.1 The learner will identify rhyming words.

Given twenty-three (23) rows of pictures each with a key word, the learner will circle the picture that rhymes with the key word.

Minimum: 22

3.2.2 The learner will associate beginning consonant sounds with the letter symbols, d, z, j, n. p, g, h, t, r, k, y, l, w, f, b, m, c, v, and s.

Given twenty (20) pictures with three (3) letters beneath each, the learner will circle the letter with which each picture begins.

Minimum: 18

3.2.2.1 The learner will associate beginning consonant sounds with the letter symbols, b, p. d, m, n, and w.

Given twelve (12) pictures with three (3) letters beneath each, the learner will circle the letter with which each picture begins.

Minimum: 11

3.2.2.2 The learner will associate beginning consonant sounds with the letter symbols, r, h, f, l, k, and g.

Given twelve (12) pictures with three (3) letters beneath each, the learner will circle the letter with which each picture begins.

Minimum: 11

3.2.2.3 The learner will associate beginning consonant sounds with the letter symbols, j, v, y, z, t, s, and c.

Given twelve (12) pictures with three (3) letters beneath each, the learner will circle the letter with which each picture begins.

Minimum: 11

3.3.1 The learner will sequence the events from a story.

Given a short story to read and four (4) sentences in random order, the learner will number the sentences in the order that they happened in the story.

Minimum: 4

3.3.2 The learner will recognize details from a story.

Given a story with five (5) detail questions, the learner will select from four (4) choices the correct answer to each question.

Minimum: 4

3.3.3 The learner will identify the main idea of a story.

Given three (3) short stories and four (4) titles for each, the learner will read the stories and select the correct title for each story.

Minimum: 3

3.4 The learner will read the primer level reader from a basic series.

The learner will read aloud to the teacher one story from a primer level reader.

Word errors allowed: 5

LEVEL 4

4.1 The learner will demonstrate recognition of a basic first reader sight vocabulary.

Given fifty (50) words, the learner will read each word aloud to the teacher.

Minimum: 5

4.2.1 The learner will associate final consonant sounds with the letter symbols, n, k, t, m, d, g, l, r, and s.

Given ten (10) pictures with four (4) letters beneath each picture, the learner will circle the letter with which each picture ends.

Minimum: 9

4.2.2 The learner will identify rhyming words.

Given fourteen (14) lists of five (5) words, the learner will circle the word in each list that rhymes with the first word.

Minimum: 13

4.2.3 The learner will recall letter symbols associated with the beginning consonant sounds, b, m, g, n, l, k, r, c, t, f, h, v, w, s, z, j, and p.

Given twenty (20) pictures, names beneath each one, with the beginning consonant missing, the learner will write in the beginning consonant.

Minimum: 18

4.2.3.1 The learner will recall letter symbols associated with the beginning consonant sounds, b, m, f, s, t, h, r, c, and d.

Given twenty (20) pictures, names beneath each one, with the beginning consonant missing, the learner will write in the beginning consonant.

Minimum: 18

4.2.3.2 The learner will recall letter symbols associated with the beginning consonant sounds, y, w, g, k, z, j, v, l, n, and p.

Given twenty (20) pictures, names beneath each one, with the beginning consonant missing, the learner will write in the beginning consonant.

Minimum: 18

4.3.1 The learner will sequence the events from a story.

Given a short story and five (5) sentences in random order, the learner will number the sentences in the order that they happened in the story.

Minimum: 5

4.3.2 The learner will recognize details from a story.

Given a story and five (5) sentences with three (3) endings each, the learner will select the correct ending for each sentence.

Minimum: 5

4.3.3 The learner will identify the main idea of a short story.

Given thirteen (13) stories and poems and three (3) titles for each, the learner will select the correct title for each story.

Minimum: 12

4.3.4 The learner will identify cause and effect relationships.

Given five (5) short stories with a cause or effect question for each, the learner will select from three (3) choices the correct answer to each question.

Minimum: 4

4.3.4.1 The learner will identify cause relationships.

Given five (5) short stories with a cause question for each, the learner will select from three (3) choices the correct answer to each question.

Minimum: 4

4.3.4.2 The learner will identify effect relationships.

Given five (5) short stories with an effect question for each, the learner will select from three (3) choices the correct answer to each question.

Minimum: 4

4.3.5 The learner will make inferences.

Given five (5) short stories with an inference question for each, the learner will select from three (3) choices the correct answer to each question.

Minimum: 4

4.3.6 The learner will make predictions

Given five (5) short stories with a prediction question for each, the learner will select from three (3) choices the correct answer to each question.

Minimum: 4

4.3.7 The learner will identify comparisons and contrasts.

Given five (5) short stories with a comparison or contrast question for each, the learner will select from three (3) choices the correct answer to each question.

Minimum: 4

4.3.7.1 The learner will identify comparisons.

Given five (5) short stories with a comparison question for each, the learner will select from three (3) choices the correct answer to each question.

Minimum: 4

4.3.7.2 The learner will identify contrasts.

Given five (5) short stories with a contrast question for each, the learner will select from three (3) choices the correct answer to each question.

Minimum: 4

4.4 The learner will read a first grade reader from a basic series.

The learner will read aloud to the teacher one story from a first grade reader.

Word errors allowed: 5

LEVEL 5

5.1.1 The learner will demonstrate recognition of the Dolch Basic Word list.

Given the Dolch list of two hundred twenty (220) words, the learner will read each word aloud to the teacher.

Minimum: 215

5.1.2 The learner will identify synonyms.

Given nineteen (19) sentences with one word missing and one word underlined, the learner will select from a choice of four (4) words a synonym for the underlined word with which to complete the sentence.

Minimum: 18

5.1.3 The learner will recognize the component parts of compound words.

Given ten (10) compound words, the learner will select from four (4) choices the words in each compound word.

Minimum: 10

5.1.4 The learner will recognize the two words for which a contraction stands.

Given ten (10) contractions, the learner will select from four (4) choices the words for which the contraction stands.

Minimum: 10

5.2.1 The learner will recognize and use the suffixes, s, es, ing, and ed.

Given twenty (20) incomplete sentences and four (4) choices for each, the learner will select the word that completes the sentence correctly.

Minimum: 18

5.2.2 The learner will recall the letter symbols associated with final consonant sounds.

Given twenty (20) pictures, the learner will write the letter for the final sound of each picture name.

Minimum: 18

5.2.3 The learner will identify letter symbols associated with the beginning consonant digraph sounds, ch, sh, th, and wh.

Given twenty (20) dictated words, the learner will select from four (4) choices the digraph with which each word begins.

Minimum: 18

5.2.4 The learner will differentiate between vowel sounds in words.

Given twenty (20) lists of five (5) words each, the learner will select the word in each list that has a different vowel sound than the other words.

Minimum: 18

5.3.1 The learner will sequence the events from a story.

Given a short story and five (5) sentences in random order, the learner will number the sentences in the order that they happened in the story.

Minimum: 5

5.3.2 The learner will use context clues to complete sentences.

Given twenty (20) sentences, the learner will select from a group of words the word that completes each sentence correctly.

Minimum: 18

5.3.3 The learner will identify the main idea of a short story.

Given six (6) short stories with three (3) phrases for each, the learner will select the phrase that tells the main idea.

Minimum: 5

5.3.4 The learner will identify cause and effect relationships.

Given six (6) short stories with a cause or effect question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 5

5.3.4.1 The learner will identify cause relationships.

Given six (6) short stories with a cause question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 5

5.3.4.2 The learner will identify effect relationships.

Given six (6) short stories with an effect question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 5

5.4 The learner will read a first level, second grade reader from a basic series.

The learner will read aloud to the teacher one story from a first level, second grade reader.

Word errors allowed: 5

LEVEL 6

6.1.1 The learner will use words that have multiple meanings.

Given twenty-eight (28) sentences and four (4) words with multiple meanings for each sentence, the learner will select the word that completes each sentence correctly.

Minimum: 26

6.1.2 The learner will identify antonyms.

Given ten (10) one or two sentence items, each with one (1) word missing and one (1) word underlined, the learner will select from a choice of four (4) words an antonym for the underlined word that will complete the sentence correctly.

Minimum: 9

6.2.1 The learner will identify root words.

Given ten (10) lists of partially underlined words with s, es, ies, or ly endings, the learner will select the word that has the root word underlinded correctly.

and

Given ten (10) words with endings and four (4) root word choices, the learner will select the correct root word for each given word.

Minimum: 9 Part I
9 Part II

6.2.2 The learner will auditorily discriminate beginning sounds of the two-letter blends, bl, pl, fl, cl, gl, sl, tr, fr, br, cr, dr, gr, sw, st, sp, and sn.

Given twenty-one (21) rows of pictures, the learner will circle the picture in each row that begins with the same sound as the first picture.

Minimum: 18

6.2.3 The learner will identify beginning consonant digraphs, sh, ch, th, and wh.

Given twenty (20) dictated words and four (4) choices, the learner will circle the digraph with which each word begins.

Minimum: 18

6.2.4 The learner will identify long, short, and R-controlled vowel sounds in words.

Given thirty (30) groups of words, the learner will select from each group (1-10) the word containing the long vowel sound, from each group (11-20) the word containing the short vowel sound, and from each group (21-30) the word containing the R-controlled vowel sound.

Minimum: 9 Part I
9 Part II
9 Part III

6.2.5 The learner will recall the letter for the vowel in dictated words.

Given twenty (20) dictated words, the learner will select the letter for the vowel sound in each word.

Minimum: 18

6.3.1 The learner will identify endings to stories.

Given ten (10) short stories with three (3) endings for each, the learner will select the correct ending for each story.

Minimum: 9

6.3.2 The learner will recognize details and inferences.

Given a story with ten (10) questions, the learner will select from several choices the correct answer to each question.

Minimum: 9

6.3.3 The learner will identify the main idea of a short story.

Given five (5) stories with four (4) titles each, the learner will read each story and select the correct title.

Minimum: 5

6.3.4 The learner will identify comparisons and contrasts.

Given seven (7) short stories with a comparison or contrast question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 6

6.3.4.1 The learner will identify comparisons.

Given seven (7) short stories with a comparison question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 6

6.3.4.2 The learner will identify contrasts.

Given seven (7) short stories with a contrast question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 6

6.4 The learner will read the second level, second grade reader from a basic series.

The learner will read aloud to the teacher one story from a second level, second grade reader.

Word errors allowed: 5

LEVEL 7

7.1.1 The learner will use words that have multiple meanings.

Given twenty (20) sentences and four (4) words with multiple meanings for each sentence, the learner will select the word that completes each sentence correctly.

Minimum: 18

7.1.2 The learner will use homonyms.

Given twenty (20) incomplete sentences and four (4) choices for each, the learner will select the homonym that completes the sentence correctly.

Minimum: 18

7.2.1 The learner will identify two-syllable (2) words and differentiate between syllabic patterns.

Given ten (10) lists of four (4) words, the learner will identify the two-syllable (2) word in each list

and

Given ten (10) lists of four (4) words, the learner will select the word that does not follow the same syllabic pattern as the other three (3) words.

Minimum: 9 Part I
9 Part II

7.2.2 The learner will identify meanings of prefixes and suffixes.

Given twenty-five (25) words with prefixes or suffixes, the learner will select from four (4) choices the correct meaning for each given word.

Minimum: 23

7.2.3 The learner will identify letter symbols associated with the beginning consonant blend sounds, bl, pl, fl, cl, gl, sl, st, sp, sm, sn, tr. fr, br, cr, dr, and gr.

Given thirty (30) dictated words, the learner will select from four (4) choices the consonant blend with which each word begins.

Minimum: 27

7.2.4 The learner will identify vowel dipthongs, au, aw, ou, ow, oi, oy, and vowel digraphs, ee, ea, ai, oa, ay, and ae.

Given twenty (20) groups of three (3) words, the learner will select from each group the word that has a different vowel sound from the other two.

Minimum: 18

7.3.1 The learner will make inferences.

Given ten (10) stories with the middle paragraph missing, the learner will select from two (2) choices the correct middle paragraph to complete each story.

Minimum: 9

7.3.2 The learner will skim for details.

Given a story with numbered paragraphs and ten (10) sentences with details from the story, the learner will skim the story to determine the numbers of the paragraph in which each detail is located.

Minimum: 9

7.3.3 The learner will identify the main idea of a story.

Given ten (10) short stories and four (4) sentences or phrases for each, the learner will select the sentence or phrase that tells the main idea.

Minimum: 9

7.3.4 The learner will sequence the events from a story.

Given a short story and six (6) sentences in random order, the learner will number the sentences in the order that they happened in the story.

Minimum: 6

7.3.5 The learner will identify cause and effect relationships.

Given eight (8) short stories with a cause or effect question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 7

7.3.5.1 The learner will identify cause relationships.

Given eight (8) short stories with a cause question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 7

7.3.5.2 The learner will identify effect relationships.

Given eight (8) short stories with an effect question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 7

7.3.6 The learner will make inferences.

Given eight (8) short stories with an inference question for each, the learner will select from four (4) choices the correct answer to each question..

Minimum: 7

7.3.7 The learner will make predictions.

Given eight (8) short stories with a prediction question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 7

7.3.8 The learner will identify comparisons and contrasts.

Given eight (8) short stories with a comparison or contrast question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 7

7.3.8.1 The learner will identify comparisons.

Given eight (8) short stories with a comparison question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 7

7.3.8.2 The learner will identify contrasts.

Given eight (8) short stories with a contrast question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 7

7.4 The learner will read the third grade reader from a basic series.

The learner will read aloud to the teacher one story from a third grade reader.

Word errors allowed: 5

LEVEL 8

8.1.1 The learner will identify the multiple meanings of words in context.

Given twenty-two (22) sentences in which a word that has multiple meanings is underlined and three (3) meanings for each, the learner will select the correct contextual meaning for each given word.

Minimum: 20

8.1.2 The learner will identify synonyms, homonyms and antonyms.

Given a story and three (3) lists of ten (10) words each, the learner will select from four (4) choices the synonym, antonym, or homonym used in the story for each given word.

Minimum: 27

8.1.3 The learner will classify words.

Given twenty (20) words and four (4) categories, the learner will select the correct category for each word.

Minimum: 18

8.2.1 The learner will differentiate between syllabic patterns and identify the number of syllables in words.

Given ten (10) items of four (4) words, the learner will select the word that does not follow the same syllabic pattern as the other three (3) words

and

Given twenty (20) words, the learner will identify the number of syllables in each word.

Minimum: 9 Part I
18 Part II

8.2.2 The learner will identify prefixes by definition.

Given twenty (20) definitions with four (4) choices for each, the learner will select the word with the correct prefix for each of the given definitions.

Minimum: 18

8.2.3 The learner will identify silent letters in words.

Given twenty (20) words with four (4) choices for each, the learner will select the silent letter or letters in each of the given words.

Minimum: 19

8.2.4 The learner will apply phonic principles to one-syllable words.

Given ten (10) one-syllable nonsense words with four (4) choices for each, the learner will select the word which illustrates the phonic principle for pronouncing the given word.

Minimum: 9

8.3.1 The learner will distinguish fact from opinion.

Given twenty (20) sentences, the learner will distinguish fact from opinion by selecting F for statements of fact and O for statements of opinion.

Minimum: 18

8.3.2 The learner will identify comparisons and contrasts.

Given ten (10) short stories with a comparison or contrast question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 9

8.3.3 The learner will recognize details from a story.

Given a story and eight (8) detail questions with four (4) choices for each, the learner will select the correct answer to each question.

Minimum: 7

8.3.4 The learner will sequence the events from a story.

Given a short story and seven (7) sentences in random order, the learner will number the sentences in the order that they happened in the story.

Minimum: 7

8.3.5 The learner will identify cause or effect relationships.

Given ten (10) short stories with a cause and effect question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 9

8.3.6 The learner will identify the main idea of a story.

Given ten (10) short stories, the learner will select from four (4) choices the main idea for each.

Minimum: 9

8.3.7 The learner will make inferences.

Given ten (10) short stories with an inference question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 9

8.3.8 The learner will make predictions.

Given ten (10) short stories with a prediction question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 9

8.4 The learner will read the fourth grade reader from a basic series.

The learner will read aloud to the teacher one story from a fourth grade reader.

Word errors allowed: 5

LEVEL 9

9.1.1 The learner will identify synonyms.

Given twenty (20) sentences each with an underlined word, the learner will select from four (4) choices the word that has the same meaning as the underlined word.

Minimum: 18

9.1.2 The learner will make analogous relationships.

Given fifteen (15) pairs of related words and one (1) underlined word, the learner will select from four (4) choices the word that relates to the underlined word in the same way as the pair of words.

Minimum: 14

9.1.3 The learner will classify phrases.

Given twenty-five (25) phrases, the learner will classify them as to who, what, when, how, and where.

Minimum: 23

9.2.1 The learner will identify phonetic spellings.

Given twenty (20) words with four (4) variations of phonetic spellings for each and a pronunciation key, the learner will select the correct phonetic spelling for each word.

Minimum: 18

9.2.2 The learner will identify root words.

Given ten (10) words with suffixes, the learner will select from four (4) choices the correct root word for each.

Minimum: 9

9.2.3 The learner will apply word analysis principles.

Given ten (10) two-syllable nonsense words with four (4) choices for each, the learner will select the word which illustrates the phonic and structural principle for pronouncing the given word.

Minimum: 9

9.3.1 The learner will make judgments as to the validity of statements.

Given a story to read and ten (10) statements, the learner will categorize each statement as probably true, probably false or no evidence.

Minimum: 9

9.3.2 The learner will identify comparisons and contrasts.

Given ten (10) short stories with a comparison or contrast question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 9

9.3.3 The learner will identify main ideas in an outline.

Given three (3) stories and nine (9) questions dealing with outline headings, the learner will select from four (4) choices the correct answer to each question.

Minimum: 8

9.3.4 The learner will identify details in an outline from a story.

Given a story and an outline with three (3) headings and nine (9) detail questions, the learner will select from four (4) choices the correct answer to each question.

Minimum: 8

9.3.5 The learner will sequence the events from a story.

Given a short story and eight (8) sentences in random order, the learner will number the sentences in the order that they happened in the story.

Minimum: 8

9.3.6 The learner will identify cause and effect relationships.

Given ten (10) short stories with a cause or effect question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 9

9.3.7 The learner will make inferences.

Given ten (10) short stories with an inference question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 9

9.3.8 The learner will make predictions.

Given ten (10) short stories with a prediction question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 9

9.4 The learner will read the fifth grade reader from a basic series.

The learner will read aloud to the teacher one story from a fifth grade reader.

Word errors allowed: 5

LEVEL 10

10.1.1 The learner will make analogous relationships.

Given twenty (20) pairs of related words and one (1) underlined word, the learner will select from four (4) choices the word that relates to the underlined word in the same way as the pair of words.

Minimum: 18

10.2 The learner will identify affixes by definition.

Given fifteen (15) definitions with four (4) choices for each, the learner will select the word with the correct affix for each of the given definitions.

Minimum: 14

10.3.1 The learner will identify cause and effect relationships.

Given five (5) selections with a cause and effect question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 4

10.3.2 The learner will identify summaries.

Given three (3) selections with four (4) main idea and summary questions for each, the learner will select from three (3) choices the correct answer to each question.

Minimum: 11

10.3.3 The learner will make inferences.

Given ten (10) selections with an inference question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 9

10.3.4 The learner will identify comparisons and contrasts.

Given five (5) selections with two (2) questions for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 9

10.3.5 The learner will outline a selection.

Given a selection and ten (10) questions dealing with outline headings and subheadings, the learner will select from four (4) choices the correct answer to each question.

Minimum: 9

10.3.6 The learner will interpret graphic materials.

Given maps, charts and graphs with ten (10) questions concerning the interpretation of these materials, the learner will select from four (4) choices the correct answer to each question.

Minimum: 9

10.3.7 The learner will identify the mood of a story and the author's intent.

Given five (5) short stories with a question concerning the mood of the story, the learner will select from four (4) choices the correct answer to each question

and

Given five (5) short stories with a question concerning the author's intent, the learner will select from four (4) choices the correct answer to each question.

Minimum: 4 Part I
4 Part II

10.3.8 The learner will identify traits and feelings of characters.

Given ten (10) short stories with a question concerning the traits and feelings of the main characters, the learner will select from three (3) choices the correct answer to each question.

Minimum: 9

10.4 The learner will read the sixth grade reader from a basic series.

The learner will read aloud to the teacher one story from a sixth grade reader.

Word errors allowed: 5

LEVEL 11

11.1.1 The learner will identify meanings of figurative language and colloquial expressions.

Given twenty (20) figurative expressions, the learner will select from a list of meanings the meaning that best interprets each expression.

Minimum: 18

11.1.2 The learner will identify meanings of homonyms, synonyms and antonyms.

Given ten (10) sentences, the learner will select from four (4) choices the homonym that correctly completes each sentence.

and

Given ten (10) words, the learner will select from four (4) choices the synonym for each given word.

and

Given ten (10) words, the learner will select from four (4) choices the antonym for each given word.

Minimum: 9 Part I
9 Part II
9 Part III

11.1.3 The learner will use context clues to infer the meaning for the nonsense word in each sentence.

Given ten (10) sentences, each containing one nonsense word, the learner will select from four (4) choices the meaning which will best complete each sentence.

Minimum: 9

11.1.4 The learner will make analogous relationships.

Given twenty (20) pairs of related words and one (1) underlined word, the learner will select from four (4) choices the word that relates to the underlined word in the same way as the pair of words.

Minimum: 18

11.1.5 The learner will demonstrate use of the dictionary.

Given excerpts from a dictionary and ten (10) questions on locating entry words, etymology of words, pronunciations of words, and parts of speech, the learner will select from four (4) choices the correct answer to each question.

and

Given excerpts from a dictionary and ten (10) questions on meanings of words, the learner will select from four (4) choices the correct answer to each question.

Minimum: 9 Part I
9 Part II

11.2.1 The learner will apply word analysis principles.

Given ten (10) polysyllabic nonsense words and four (4) choices for each, the learner will select the answer which illustrates the phonic and structural principle for dividing the given word syllables.

Minimum: 9

11.2.2 The learner will identify words with multiple meanings and multiple pronunciations.

Given twenty (20) phonetically spelled words with diacritical markings and two (2) sentences for each, the learner will select the sentence in which that word is used.

Minimum: 18

11.3.1 The learner will recognize propaganda and persuasion.

Given ten (10) selections with a propaganda and persuasion question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 9

11.3.2 The learner will identify time relationships.

Given five (5) paragraphs, each with four (4) sentences in random order, the learner will select from four (4) choices the correct time sequence arrangement for each paragraph.

and

Given five (5) selections with a time relationship question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 4 Part I
4 Part II

11.3.3 The learner will identify summaries.

Given three (3) selections with four (4) main idea and summary questions for each, the learner will select from three (3) choices the correct answer to each question.

Minimum: 11

11.3.4 The learner will identify cause and effect relationships.

Given five (5) selections with a cause and effect question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 4

11.3.5 The learner will make inferences.

Given ten (10) selections with an inference question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 9

11.3.6 The learner will identify comparisons and contrasts.

Given five (5) selections with a comparison and contrast question for each, the learner will select from four (4) choices the correct answer to each question.

Minimum: 4

11.3.7 The learner will outline a selection.

Given a selection, a blank outline, and thirteen (13) questions dealing with outline headings and subheadings, the learner will select from four (4) choices the correct answer to each question.

Minimum: 12

11.3.8 The learner will interpret graphic materials.

Given maps, charts and graphs with ten (10) questions concerning the interpretation of these materials, the learner will select from four (4) choices the correct answer to each question.

Minimum: 9

11.4 The learner will read the seventh grade reader from a basic series.

The learner will read aloud to the teacher one story from a seventh grade reader.

Word errors allowed: 5

INSTRUCTIONAL STRATEGIES

READING DOMAIN

Lesson Plan

Scope

The following lesson plan will cover most instruction for most of the relevant parts (marked by *) of the short term objective written below. In other words, only those items marked with an asterick will be taught. The other enabling skills have already been mastered; thus, they will merely be reviewed and practiced during the whole segment of the lesson. Of course, the particular items will change (i.e., from the plural ending - es, to the verb tense ending - s, to the verb tense ending - ies, etc.), but the basic arrangement will be maintained.

Objective

Given a 40-item criterior-referenced test which consists of a representative sample of the skills written below, Billy will write answers with 95% accuracy.

1. Recognize that 's is used to indicate possession.
2. Recognize that er and or are used to indicate agent or doer.
3. Recognize that s is used to indicate the plural form of nouns.

*4. Recognize that es is used to indicate the plural form of nouns.

5. Recognize that ies is used to indicate the plural form of nouns.
6. Recognize that ves is used to indicate the plural form of nouns.

* 7. Recognize that s is used to indicate the present tense of verbs.

* 8. Recognize that ies is used to indicate the present tense of verbs.

9. Recognize that ing is used to indicate the progressive tense of verbs.

*10. Recognize that ed is used to indicate the past tense of verbs.

11. Recognize that er is used to indicate the comparative form of adjectives.

12. Recognize that est is used to indicate the superlative form of adjectives.

13. Identify root words with n endings.

14. Identify root words with est endings.

15. Identify root words with er endings.

*16. Identify root words with ed endings.

17. Identify root words with ing endings.

Initial Presentation

Billy, the first thing you will do in the next few days is learn some word endings. Do you know what word endings are? Here is what some of them look like, and what they mean.

(Present Billy with a set of various model word endings.)

Look these over. They're a lot like the letters you put on the ends of other words, aren't they? And you have already learned those other endings. Here are the ones you already know.

Present Billy with complete model of word endings.

In fact, you got all of these endings right when I gave you a test a few days ago (pointing out the ones he got correct), so the ones you're looking at now are probably familiar; that is, you've probably seen them before. Have you seen them before? Good.

(Present Billy with picture card showing one box.)

Now, Billy, how many objects are there in this picture?

That's right! Good. There is only one box (emphasizing the word "box"). Now, here is the word for that picture.

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(Present Billy with a card which has the word "box" written on it and pronounce the word "box" for him.)

Can you read that word for me? That's right, Billy! It says "box."

(Present Billy with a card showing two boxes.)

Now, Billy, look at this picture (pointing). How many objects do you see?

Right!. There are two boxes (emphasizing the es ending).

(Present Billy with a card which has the word "boxes" written on it.)

Now, look at the word for this picture. It is "boxes" (emphasizing the es).

Now, it's your turn. Can you read this word?

That's good, Billy! It says "boxes".

Now, Billy, I want you to look closely at these two words (pointing to the word cards). You can see that the word which means only one box does not have an extra ending. But the word which means more than one box is spelled with an es on the end. This is just like when you add s to the word "cat" when you are talking about more than one cat, and you have already learned how to do that. The only difference now is that we added the letters es instead of s. You can see that when we add letters onto the end of a word, we change its meaning. When we added the es to the word "box," we made the word mean more than one.

(Present Billy with picture cards—one showing one church; another showing three churches. Also, present him with word cards—one with the word "church"; another with the word "churches".)

Billy, I want you to look at these four cards. This is a picture of three churches (pointing to the picture card). Can you point to the word which describes the picture of three churches?

That's great, Billy! The word is "churches" and it has an es on the end. Now, can you read this word for me? (Point to the card with the word "church")

Sure, it says "church" and it means only one church.

Okay, let's try a few more to make sure you have the idea.

(Present more samples for this concept. Use pictures of objects whose words end in ch, sh, s, x, and z, and whose plural forms are made by adding es. The es will be underlined in each plural form of the words.)

Okay, Billy, now that you know that by adding the letters es to certain words, we can make them mean "more than one". In fact, whenever we add any letters onto a word, we change the meaning of the word. This is what you will be doing the next few days. The only difference is that we won't keep using pictures. Just the same, your job doesn't change--you're still recognizing that letters on the end of words change their meanings.

Here is the way I will be asking you questions. First, I will say the whole thing, like this:

witches means more than one witch

You will look at the words as I say them. Then I will take away the answer and say the first part again:

witches means. . . . .

Then you will say the rest--that's called the answer. The first ending you will learn is the es ending which indicates the plural, or "more than one" form of nouns. Here are some examples.

)Present Billy with a set of sentences incorporating plural nouns formed with es.)

I will ask you questions in another way, too. This time, I will show you a sentence with a word left out. Also, I will show you three words, one of which goes in the blank where the word was left out of the sentence. Like this,

You may make three_____________________

wish   wishes   wish's

Then I will say the sentence, leaving out the missing word, and you will choose the correct word from the three choices, and write the word in the blank. Here are some examples.

(Present Billy with a set of sentences and word choices.)

See? These are the same as part of the word endings I showed you before (pointing to the section of es plurals in the complete set of word endings.

Before you're through you will know all of these without even thinking. But first, you will learn the es ending to indicate the plural form of nouns.

I know that it will be hard to learn that letters added onto words make them mean something different. So, I have underlined the important letters. When we are practicing, you should pay special attention to these underlined letters. It will help you get the right answers. Now, tell me, what letters will you concentrate on the most and how are they marked?

Present Billy with an example: classes

Present Billy with an example: classes

That's right! The underlined letters, es, are the ones you will concentrate on. It is kind of hard to remember all this, isn't it? But, I know you will be able to learn them. In fact, you will be able to recognize them without even having to think about it (smiling).

You see, it's important to be able to recognize the word endings quickly and easily. Do you know why?...Well, I'll tell you. It's so you will be able to understand what you are reading when you read a book about sports, a Mad magazine, or anything else you read. For example, you will know right away whether the man received one punch or many punches on the nose. Later, when you have to do a lot of reading, it will be extra hard if you can't understand what the words mean, and it would take too long if you had to stop and think about what each word means. Another reason why it's important to learn to recognize what word endings mean is so you can understand what people are saying to you. Can you imagine having to ask your P.E. coach what he meant when he told you to throw three passes to the receiver? And, what if you didn't ask him, but threw only one pass? Don't you think he would be pretty mad? So, you will learn to recognize these endings without even having to stop and think about them.

All right, Billy, I have only one more thing to tell you about. It is how I will check to see how much you have learned.

First, I will give you a sheet like this each day. It has exercises involving the plural ending es on it. I will ask you to answer each item as quickly and accurately as you can by writing the answer.

(Present Billy with a sample practice test.)

(Notice that the letters es are not underlined. So, you will have to try to remember that those letters mean "more than one" without the line to help you.

Next, after you have learned the es ending for plural nouns, I will give you practice and a test on all the word endings because later, you will have to know them all just like me, your Dad, Larry Czonka, Coach Funderburk, and other important people.

Okay, I've told you what you will be doing and how you will do it. Do you have some questions for me?

(Answer questions)

You will probably have more questions later. That's good. Whenever you are confused or don't understand something, ask me to explain it to you. I'll be glad to answer all your questions; otherwise, you will have a harder time learning these word endings. Now, let's practice with the es ending which means "more than one."

Instruction and Practice

(Instruction will essentially be a reiteration of the information presented earlier. Instructions will vary on examples to maintain interest, but basically, the crux of the comments will be kept as similar as possible to reduce confusion. Of course, modifications will be made for teaching the different skills, e.g., verb tense endings, root words.)

With regard to practice, the following steps will be implemented repeatedly until the objective is mastered:

(1) Present various plural es nouns using a prompting method. The layout for this method is below:

I Present the Pair Orally and Visually	I Present The Stimulus	Billy's Response
churches means more than one church	churches means	________
bosses means more than one boss	bosses means	________
dishes means more than one dish	dishes means	________
foxes means more than one fox	foxes means	________
quizes means more than one quiz	quizes means	________
etc.	etc.	etc.

(2) After Billy has practiced using the prompting method above, present the es plural endings in a different way. In this case, Billy's responses will be written (the form used during evaluation).

I Present the Pair Visually	I Present The Stimulus	Billy's Written Response
You may make three ________. wish wishes wish's	You may make three ________.	________
etc.	etc.	etc.

More practice of this type will be used because it more closely resembles the form used in evaluation. The items will be varied to maintain interest and enhance motivation.

Throughout steps 1 and 2, specific feedback will be given including discussion concerning confusion. Billy will be continuously praised for correct responses until evaluation of the short term objective indicates an improvement of at least 10%.

(3) Present Billy with a practice test. Say, Billy, write the answer to each item as accurately as you can. Work as quickly as possible, but be sure your answers are accurate. This is not a timed test.

When Billy completes the test with 95% or greater accuracy, evaluate mastery of the short term objective.

Evaluation

When initial mastery of the es plural endings is attained, a 40 item criterion-referenced test consisting of a representative sample of word endings will be administered. This will occur as soon as it is certain that reminiscence has had a chance to affect performance. Of course, administration, scoring, and interpretation instructions for the test will be followed in order to acquire as accurate measurement as possible.

When mastery is initially attained for the short term objective, (i.e., 95% accuracy), practice on the whole will continue half again as long as it took Billy to attain initial mastery. Then, evaluation will occur again.

Generalization and Transfer

Instructions throughout the strategy will emphasize the use of skill in recognizing word endings in other situations. Aside from those already mentioned in section A, I will point out similarities and differences between the learning situation and various transfer situations. For example;

Billy, suppose you wanted to write a letter to Larry Czonka. One of the questions you wanted to ask him was how many gashes, punches, and scratches he usually gets in one football game. You would have to know how to write the words. How would you spell "scratches?"

That's right, Billy. You would write the word "scratch," and add es to the end.

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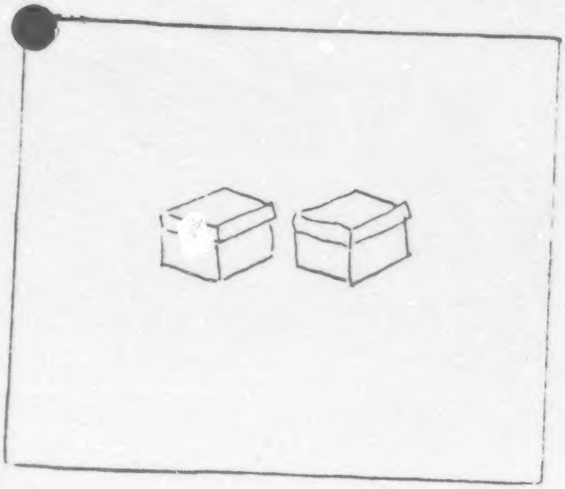
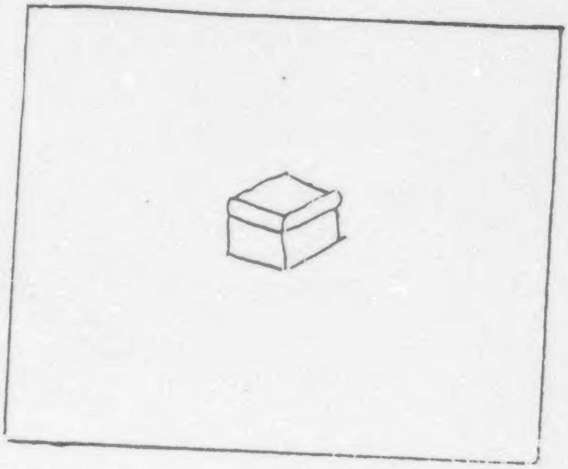
Then, if you wanted to talk to him and tell him that one time when you were playing football, you got a deep cut and had to get 20 stitches, you would have to know whether to say the word stitch, or the word stitches. You would decide whether or not to add es in the same way you knew that "stitches means more than one stitch." But you wouldn't want to have to stop and think about the example, and you wouldn't have it in front of you like you did during practice. You would have to think of the word in your head. You would not have three words to choose from, either. In your mind, you would have to know that the word has an es on it. Can you understand the differences, but still see how it's kind of the same thing? TERRIFIC!

When it's possible, I will guide Billy into transfer situations to let him actually experience the similarities and differences. For example, I will ask him questions requiring answers involving nouns made plural with es, and have him write the answers.

Picture and Word Cards

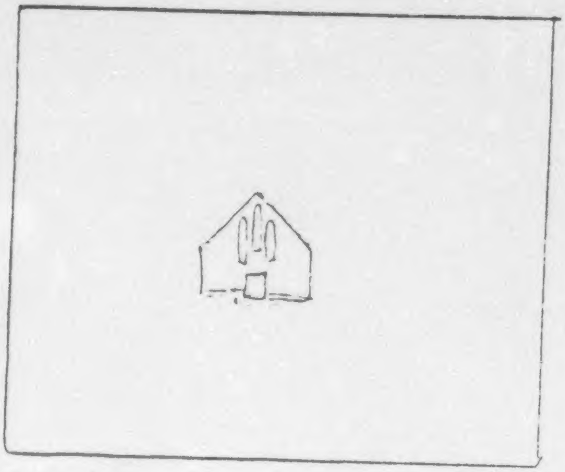


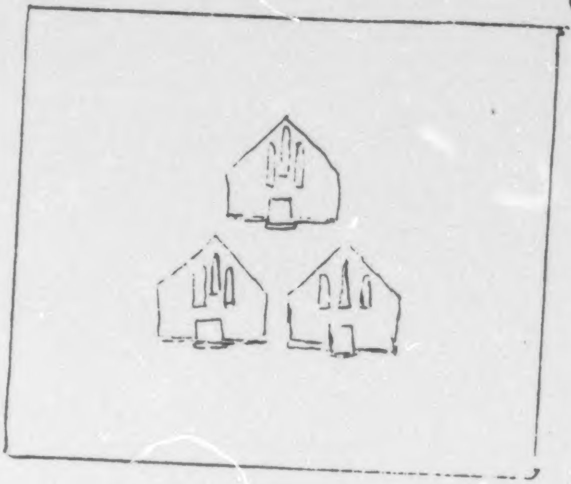


boxes

box

Picture and Word Cards





church

churches

PRACTICE TEST

1. You may have three ____________________.
   guess guesses guess's

2. Tom broke two _______________.
   dishes dish dish's

3. Billy made A's on all of the ________________.
   quiz's quiz quizes

4. Mary has many pretty __________________.
   dress dresses dress's

5. Place the ____________ on the table.
   boxes box's box

6. There are many pretty __________ in Florida.
   beach beaches beach's

7. The good fairy will grant them five ___________.
   wish's wish wishes

8. The gypsies ate the basket of ____________________.
   peach peaches peach's

9. After the storm, many ___________ fell off the trees.
   branches branch branch's

10. Please get out six ________________.
    glasses glass's glass.

EXAMPLES OF WORD ENDINGS

Did you see those shiny ____________?
star stars star's

Jack __________ the street this morning.
crossed crossing crosses

There are many trees, but this is the ____________ one.
big bigger biggest

This is ____________ bat and ball.
Billy's Billy Billys

We picked many ____________.
daisy's daisies daisy

She __________ hard before every exam.
studies studying study

A person who farms is a ______________.
farm farming farmer

My rope is ___________ than Bob's.
longest longer long

Indians used ___________ to kill animals for food.
knives knife's knife

We were ____________ when the clock struck nine.
sleep sleeping sleeped

Each year mother cans ________________.
peach's peach peaches

The man in the movie is an _______________.
acting actor acts

The dog ____________ whenever a car comes near.
barks barking barked

Circle the words which have endings:

chest
born
cheer
parked
blackest
red
ring
smaller
broken

Lesson Plan

Scope

This lesson plan is designed to teach the learner how to skim for details and general information. The details help to understand the main idea. They may give examples or additional information, or present evidence to support a point. This lesson plan includes skimming for details only.

Objective: 7.3.2

Given a story with numbered paragraphs and five (5) sentences with details from the story, the learner will skim the story to determine the number of the paragraphs in which each detail is located.

Initial Presentation

Get the students' attention by excitedly telling them that they are going to read in a different way today. First, read and explain the objective to them. Tell the students that rather than read the whole story, they are going to skim a very interesting story for some important details. Stress the importance of noting what he or she thinks is important and concentrate on that. A question might come to mind. How does one know which details are important? First, the purpose in reading must be clear. Ask yourself: What am I trying to learn? Tell the students that once they decide what their purpose in reading is, they will be better able to decide which details they must remember.

For example, consider the details in the following paragraph. Skim the paragraph to learn about the conestoga wagon in American History.

The chimes of the bells fastened above the necks of the horses and the rumble of the sturdy wheels of the conestoga wagon were familiar sounds along the highways of America during the last part of the eighteenth and the first part of the nineteenth century. Thousands of these brightly painted freight carriers moved slowly along the roads, drawn by sleek, powerful horses which were driven by a teamster whith a whip under his arm and a "stogie" in his mouth.

It is believed that the first of these wagons was built in the Conestoga Valley in Pennsylvania and received its name from the valley. These picturesque and distinctively American vehicles, with their curved bottoms, and white canvas covers, were invariably painted red or blue and could carry five or six tons of freight. They played an important part in the history of America, helping to link our great country together at a time when there were no other means of long distance transportation. During the Revolution they were used to carry supplies to the American forces, and later to carry the settlers and their families to the new lands of the West, in which period they were known as a prairie schooner.

Ask the students for the main idea of this paragraph. It is well stated in sentence five (5). Read the sentence again. Details that explain or support this main idea will be important for an understanding of the paragraph. Ask for these details. The first sentence tells when the conestoga wagons were in common use. The second sentence tells how many wagons there were and how they were drawn. Later we learn how much freight the wagons could carry. Two more important details appear in the last sentence, supporting the idea that conestoga wagons played an important part in the history of our country. Tell the students that the most important details in the paragraph might be listed like this:

1. Conestoga wagons were common during the last part of the 18th century and the first half of the 19th century.
2. There were thousands of such wagons.
3. A wagon could carry five or six tons of freight.
4. During the Revolution, conestoga wagons carried supplies to American forces.
5. Later they carried settlers to the West.

Be sure to tell the students that the other details in the paragraph are interesting and colorful, but do not play an important part in helping one to understand the part conestoga wagons played in American history.

Remind students that when they are reading materials that contain many details, do not try to remember every detail. Recall the purpose in reading. Ask yourself which details are important for understanding the main idea and concentrate on fixing those details in your mind.

Instruction and Practice

The students will be provided with a braille or large print textbook. Braille writers will also be provided for braille students. The teacher

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will assign a given lesson in the textbook with directions as to what to do. For example: turn to page 108 and work out exercise 15.

Exercise 15

Read each paragraph below according to suggestions given. Then follow the directions for writing your answers. The main idea in this paragraph is stated in the first sentence. List the details that support that main idea.

Robert Fulton was a talented inventor. As a young man, he invented a system for getting canal boats from one level to another by hauling them up a ramp. He tried unsuccessfully to sell it to both England and France which was then at war. He designed the first steamboat that made money for its owner. But all of his life he had a secret ambition. He wanted to be a famous painter.

In this paragraph, the first sentence states the main idea. Skim for details that are not important for an understanding of that idea.

Southern Brazil produces agricultural products, cattle, and lumber. Farmers grow large amounts of corn, tobacco, and rice. Most of the corn is fed to pigs as in this country. Good grazing lands support beef, cattle and sheep, and quantities of meat are frozen and canned and shipped overseas. The forest of Southern Brazil contains pine trees of good quality and size, and these are sent by rail to the country's cities and seaports. However, railroads do not reach every part of Brazil. In fact, some sections of the country can hardly be reached at all.

After finishing these two paragraphs, have students check and discuss in the classroom for understanding. Skimming for details will be individual and group work for at least five days.

To reinforce this lesson, ask the students to choose paragraphs of interest and to skim for the most important details for understanding the main idea and to bring to class for a discussion. Ask students to choose interesting paragraphs so everyone will be eager to participate. Hopefully, the teacher will be able to determine how well the lesson was understood.

Evaluation

Upon completion of this objective, the students will be given a written test to determine how well they can skim for details. If mastery is not attained at this point, the objective will be retaught at a later date.

Generalization and Transfer

Skimming a reading assignment is a good way to get a general idea of what it is about before starting to study it. Instruction throughout the learning period will focus on how to skim for details.

The understanding gained from the lesson on skimming for details may be used in many instances. Skimming may be used in the following ways:

1. Skimming the news for information
2. Skimming books in the library for a given topic
3. Skimming prices in the grocery store
4. Skimming novels of interest
5. Skimming charts, maps, and tables for information
6. Skimming the telephone directory for certain names.

Lesson Plan

Scope

This lesson plan is designed to teach the meanings of antonyms, homonyms, and synonyms.

Objective: 8.1.2

The learner will identify antonyms, synonyms, and homonyms. Given twenty (20) pairs of words in which each pair are homonyms, antonyms, and/or synonyms, student will write the name of each pair with 95% accuracy.

Initial Presentation

Define the meaning of antonym, synonym, and homonym.

Synonyms are words that have about the same meaning and antonyms are words that have opposite meanings. Homonyms are words that sound alike but are spelled differently and have different meanings.

Examples:

Synonyms	Antonyms	Homonyms
buy-purchase	fast-slow	dew-due
finances-funds	love-hate	sight-site

Knowing about synonyms, antonyms, and homonyms helps build a vocabulary that enables one to use words accurately, and may be considered a part of the general study of word meanings. It is very important to use words that say what is meant. Too frequent repetition of the same words is undesirable, even though the words may be used accurately.

Ask the class to discuss ways in which it is helpful to know about synonyms, antonyms, and homonyms keeping in mind the importance of having a large vocabulary from which to draw words that help to express meanings precisely.

The class will play a game based upon the use of synonyms, antonyms, and homonyms to reinforce their knowledge of the words and for motivation. The class is divided into teams A and B. Someone on team A may give a word to be matched; someone on team B will match it correctly. The chief value of this game is not to win, but to learn to use accurately the words known and to learn new words from others.

Instruction and Practice

Practice sessions for antonyms, synonyms, and homonyms will be separate, and a session for all three will be presented at the end. Provide a worksheet with one word from each group (synonyms, homonyms, and antonyms) and have students match them and use the new ones in sentences. Review and illustrate examples before each practice session. Continue to provide experiences until mastery is attained. Provide corrective and instant feedback during practice sessions.

Evaluation

When students are completing the practice sessions without any errors, evaluation of objective should begin. See sample evaluation sheet.

Generalization and Transfer

Review the definitions of antonyms, synonyms, and homonyms. Tell students you want them to be able to (1) define these words; (2) give examples of each; and (3) write sentences using the words given in #2. Give practice activities until accuracy is attained. Possible activities include:

1. Timed worksheet to improve rate of response
2. Challenge matches where two students try to stump each other.

Students should be able to name antonyms, synonyms, and homonyms not named in the original practices.

RELATED PRACTICE

Hononym Worksheet

Directions: Write the homonym for the underlined word in each of the following sentences.

1. Come through this door. ______________
2. Both his feet were injured. ______________
3. A huge bear came out of the woods. ____________
4. A plane is a carpenter's tool. ______________
5. No mail is delivered on holidays. ______________
6. Will you wait for me? ______________
7. The air was fresh. ______________
8. There was a sale on toys. ______________
9. Which is their house? ______________
10. John had a red sweater. ______________

Write a sentence using each homonym:

1. ____
2. ____
3. ____
4. ____
5. ____
6. ____
7. ____
8. ____
9. ____
10. ____

RELATED PRACTICE

Antonym Worksheet

Directions: Write an antonym at the end of each sentence to match the underlined word.

1. A rabbit is very fast. ____________________
2. Grandfather is old. ____________________
3. I hate rainy Sundays. ____________________
4. What comes after April? ____________________
5. The princess was beautiful. ____________________
6. Canada is near New York. ____________________
7. The clothesline was loose. ____________________
8. Sixteen is an even number. ____________________
9. The ancient castle stood on a hill. ____________________
10. Gold is a shiny metal. ____________________

RELATED PRACTICE

Synonym Worksheet

Directions: Write additional synonyms for each synonym given below. You may use the dictionary.

1. Smart ______________
2. barren ______________
3. hinder ______________
4. count ______________
5. secure ______________
6. collect ______________
7. arid ______________
8. assist ______________
9. devour ______________
10. conclude ______________

EVALUATIVE TEST

Directions: The following pairs of words are synonyms, antonyms, or homonyms. Study each pair of words. Beside each, write Homonym, Antonym, or Synonym, depending on function of each pair.

1. rival - competitor ______________
2. fiber - thread ______________
3. toe - tow ______________
4. relax - tense ______________
5. crisis - turning point ______________
6. flower - flour ______________
7. finances - funds ______________
8. stupid - intellectual ______________
9. sew - sow ______________
10. vapor - gas ______________
11. weigh - way ______________
12. rural - urban ______________
13. week - weak ______________
14. deny - acknowledge ______________
15. sight - site ______________
16. buy - purchase ______________
17. frown - smile ______________
18. before - after ______________
19. love - hate ______________
20. frank - candid ______________

Lesson Plan

Scope

The following lesson plan will cover instruction for most of the short term objectives written below. Moreover, it is intended to prepare the learner in aspects of critical reading and thinking in order to increase his/her comprehension.

Objective: 8.3.1

Given twenty (20) sentences, the learner will distinguish fact from opinion by selecting F for statements of fact and O for statements of opinion with 95% accuracy.

Initial Presentation

Do you remember when we talked about qualifying words and we decided that it is a good idea to "ask mental questions" or "talk" to the writer? You know that good readers ask questions as they read.

Today we are going to read some statements. I want you to ask the question, "Can I prove this to be true?" If your answer is yes, we call this statement a fact.

Please read the first sentence on your braille skills sheet:

"Fifty American hostages were reported to have been held at the American Embassy in Iran."

We know that this statement can be proven to be true. Most facts about which we are uncertain can be looked up in a dictionary, newspaper or an encyclopedia.

Now read this sentence:

"It is important to do medical research in order to find new antibiotics."

How is the second sentence different from the first one? It is impossible to prove the second statement because it states an opinion. An opinion is what a person thinks to be true.

We cannot believe everything we hear, watch on television, or read. Radio and television broadcasts include many advertisements which try to encourage us to buy special products. And writers sometimes try to persuade us to think as they do. Sometimes they leave out important information which would change our viewpoint. If we do not question or think, we may believe all that we hear, see, or read is true.

Now it is especially important for us to think when we read, and I don't mean just when a writer is trying to persuade us to accept his opinion as a proven fact, but getting the writer's meaning is necessary so that we can relate our experiences and knowledge to his. We must think and question. Read the following sentences:

1. Dr. Richard Hyer is superintendent of the Georgia Academy for the Blind.
2. Fried chicken is the best tasting food in the world.
3. Swimming is a better form of exercise than walking.

The first sentence states a fact which you can prove to be true. But it is more difficult to prove that fried chicken is the best tasting food. The word best means the greatest degree of good or excellence. It is something which is very difficult to prove. It is a matter of opinion. The second sentence gives one person's opinion of food. The third sentence cannot be proven to be true either. It does not give enough information. You might ask, "better for whom?" Swimming may be a better exercise for some people, but it might not be better for everyone. Many factors may be involved in determining the best exercise for an individual such as a person's health, physical condition, or age.

Please open your reading book to page 347. Let's read and then discuss the section on fact and opinion. (See illustration 1.) (The student follows the suggested procedure.)

Very good. Now please write the numerals one through five (1-5) on a sheet of paper. Before each numeral write F for fact and 0 for opinion. (The exercise is in the text, GOALS IN READING, published by Harcourt Brace Jovanovich, Inc., 1974 edition, page 349. See Illustration #2).

We are always reading facts as well as opinions and both are important in the learning process. We gain important information from facts and we receive help in forming our own opinions by learning the opinions of others. Very often the writer helps us to know the difference when including words like "the fact is..." "in my opinion...", "I think..." or "I believe..."

Let's look at page 350 in our reading text noting facts as well as opinions. Write the numerals one through eight (1-8) on your paper. Then write F for a fact or 0 for an opinion after each numeral. When you have finished, we'll discuss your answers. (See illustration #3).

Next write the answers to questions one through four (1-4) and we'll discuss them.

Instruction and Practice

(Following an assignment in the text the teacher will touch upon a lesson in fact and opinion.)

I want you to remember that it is important for you to recognize an opinion as well as a fact. You know that a fact can be checked; it is a matter of record. An opinion is to be judged upon its own merit for what it is.

Your next assignment is to skim through the story about Benjamin West and find factual statements which can be proven to be true. You may include the date of birth. (This is a discussion lesson. Allow time for skimming.)

Very good. Now let's re-read the last paragraph in the story. Are there opinions in the first sentence? (Yes) In the second? (No) Discuss the meaning of the words creative and original. As you see here in this paragraph, fact and opinion are very closely related. The writer points out that West was a leading artist in his time.

Lets turn to our skills book for some practice in distinguishing fact from opinion. (See illustration 4.) Remember to ask the mental question, "Can this be proved?" Then write F for fact and O for opinion in the space provided before the numerals.)

Here is a skills sheet. Today you are given four items and a dictionary definition for each. If the statement concerning the word is a fact, write an F. If it expresses an opinion, write an O in the space provided.

Evaluation

Given twenty (20) sentences for distinguishing fact from opinion, the learner will write F for fact and O for opinion.

Generalization and Transfer

Instructions throughout the strategy will emphasize the separating of facts from opinions while pointing out to the learner that sometimes a person needs to have the facts on a given subject whereas other times it is necessary to know peoples' opinions.

Take the Presidential Primaries and the candidates for example. John Connaly started his campaign with more funds to spend than any other Presidential candidate. This is a fact. But recent opinion polls predict that Bush will win the Republican nomination. Furthermore, a year ago the opinion polls ranked Senator Kennedy ahead of President Carter. However, the fact that President Carter's strong response to the Soviet threat in Iran and Afghanistan has placed him ahead in current opinion polls makes him the strongest candidate for the Democratic Party today. Moreover, a statement presented as a fact may be proved to be inaccurate or only partly true. Therefore, it is necessary to check the facts. Fourth grade students may refer to the World Book and thus be introduced to yet another skill while distinguishing fact from opinion.

Illustration 1

FACT OR OPINION?

When we know something can be proved, we say it is a fact.

For example, we know that the rocket Mariner V. passed within 2,480 miles of the planet Venus in 1967. The following sentence states that fact:

In 1967, Mariner V passed within 2,480 miles of the planet Venus.

We know that this statement can be proved to be true. Anyone who is not sure of the fact can look it up in a library. Now read this sentence. Does it state a fact?

It is very important to send a space ship to the moon.

How is the second sentence different from the first one?

The second sentence does not make a statement that can be proved true or false. It states an opinion. An opinion is what someone thinks or believes.

Understanding the difference between facts and opinions helps you to think clearly about what you read. Read these three sentences. Which states a fact? Which give opinions?

Illustration 2

Fact or the word opinion.

1. In 1965, there were 22,800 Eskinos in Alaska.
2. During the summer in the Arctic Circle, temperatures seldom rise above 50 degrees.
3. Hunting polar bears from an airplane is poor sportsmanship.
4. Learning to read is one of the most important rasks of a first-grader.
5. American children spend too much time watching television.

Every day we read both facts and opinions. We learn from both kinds of writing. Factual writing gives us information we need. Knowing the opinions of other people helps us to think about things and form our own opinions. But it is important to see the difference between facts and opinions. If we mistake an opinion for a fact, we may become confused in our thinking.

Illustration 3

Read these two paragraphs about Hawaii. Read thoughtfully. The sentences are numbered so that you can refer to them easily. Notice which sentences state facts and which sentences give opinions. Write answers to the questions that follow.

1 Many people believe that Hawaii, the fiftieth state, is the most beautiful state in the Union. 2 It is certainly the friendliest. 3 Everywhere in the islands, you hear people saying aloha instead of "hello" and "good-bye." 4 Aloha is a Hawaiian word that means "love." 5 No one knows where the first Hawaiians came from or exactly when they arrived in the islands. 6 The first European to visit Hawaii was Captain James Cook, an Englishman. 7 He landed on one of the islands on January 18, 1788. 8 The natives believed he was their god Lono.

1. Whose opinion is stated in the first sentence - the opinion of the writer or of "many people"?
2. Is the second sentence a statement of fact of opinion?
3. Does Sentence 5 tell a fact or an opinion? Sentence 6? Sentence 7?
4. What fact is stated in the last sentence? What opinion of the natives is expressed in the same sentence?

Illustration 4

The sentences below are written in pairs. One sentence in each pair states a fact and one states an opinion. Write F before the fact and O before the opinion.

____ 1. One of the brass instruments is the trumpet.

____ 2. Trumpets are best for playing rock music.

____ 3. Abraham Lincoln was our greatest president.

_____4. George Washington was the first president of our country.

_____5. Astronauts have a good sense of humor.

_____6. Astronauts fly space missions.

_____7. Clay is used in making pottery.

_____8. Working with clay is easier than painting.

_____9. Very few people would want to live through an Arctic winter.

____10. Winters near the Arctic Circle are very long.

The selection below might have been written by a pupil for the school or class paper. The article contains statements of fact and statements of opinion. Read the review carefully. Decide which statements are fact and which are opinions. The sentences are numbered. In the blanks on the right, write Fact or Opinion to describe each sentence.

1 The program at the Parent Teacher's Association meeting last Friday was the best our school has ever given. 2 There were many favorable comments from the audience.

3 The soloists were Janice Blake, violin, Jeff Brodsky, clarinet, and Myra Taylor, piano. 4 All three joined together for one selection. 5 They all performed very well.

6 The P.T.A. committee made special programs for the occasion. 7 Their bright colors and lively design were attractive.

1. ____________________

2. ____________________

3. ____________________

4. ____________________

5. ____________________

6. ____________________

7. ____________________

Seeing Facts and Opinions

Using a dictionary is a good way to check facts. Read the dictionary definition for each underlined word. Then read the sentences below. If the sentence states a fact, write F in the blank. If it expresses an opinion, write O.

harp. A stringed musical instrument played by plucking with the fingers.

____ 1. The harp is a beautiful instrument.
____ 2. The harp is played by plucking the strings with one's fingers.
____ 3. The music of the harp is delightful to hear.
____ 4. The harp belongs to the family of musical instruments that have strings.

opera. A kind of play set to music in which all or most of the lines are sung rather than spoken. The singers in an opera are usually accompanied by an orchestra.

____ 5. Opera is the greatest form of musical entertainment.
____ 6. A play set to music is sometimes called an opera.
____ 7. Most of the lines in an opera are sung rather than spoken.
____ 8. Opera is too difficult for young children to enjoy.

dragonfly. An insect having a long, slender body and four long, very thin wings. It eats flies and mosquitoes.

____ 9. Dragonflies have beautiful wings.
____ 10. Dragonflies should not be allowed near lakes or swimming pools.
____ 11. The dragonfly is a terrible pest.
____ 12. The dragonfly has two pairs of wings.

musk ox. An arctic animal with a musky smell, shaggy hair, and curved horns, resembling both the sheep and the ox.

____ 13. The musk ox is a valuable animal for farmers to raise.
____ 14. The musk ox does not have a coat of short, smooth hair.
____ 15. The musk ox lives in cold climates.
____ 16. Musk oxen would make good pets.

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NAME:______________________________ DATE:____________________

FACT AND OPINION TEST

READ EACH OF THE FOLLOWING STATEMENTS. THEN ON GIVEN LINES, WRITE O IF IT IS AN OPINION OR F IT IS A FACT.

___ 1. THE BEST SHOW ON TELEVISION IS "ROOM 222."

___ 2. A NEWBORN BABY CANNOT TALK.

___ 3. THERE IS A PAD OF WHITE PAPER ON MY DESK.

___ 4. THE TEACHER I HAVE THIS YEAR IS TERRIFIC.

___ 5. IN NEW MEXICO YOU CAN STILL FIND ADOBE HOUSES.

___ 6. AUTUMN IS THE PRETTIEST SEASON OF THE YEAR IN NEW ENGLAND.

___ 7. THE NEW CLOTHING STYLES ARE UGLY.

___ 8. RIDING IN A CAR IS BETTER THAN RIDING ON AN AIRPLANE.

___ 9. THERE ARE MANY DIFFERENT KINDS OF CARD GAMES.

___ 10. AN ARID CLIMATE IS HOT AND DRY.

___ 11. STUDENTS IN GEORGIA ATTEND SCHOOL FOR 180 DAYS.

___ 12. THE MOON IS OUR NEAREST NEIGHBOR IN SPACE.

___ 13. MY FATHER IS THE BEST DAD IN THE WORLD.

___ 14. GRAVITY IS A FORCE WHICH PULLS TOWARD THE CENTER OF THE EARTH.

___ 15. THE LINCOLN MEMORIAL IN WASHINGTON, D.C. IS MADE OF WHITE MARBLE.

___ 16. THE EROSION OF ROCKS, BUILDINGS, OR LAND BY WIND, RAIN OR SUN IS CALLED WEATHERING.

___ 17. FLORIDA IS THE HOTTEST STATE IN THE UNION.

___ 18. SOME ROCKS BEGAN AS LIVING THINGS.

___ 19. MY FRIEND IS THE MOST HONEST PERSON IN TOWN.

___ 20. ROCKS BROUGHT BACK FROM THE MOON WERE FORMED BY FIRE.

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Lesson Plan

Scope

This lesson plan teaches the important skill of reading for main ideas and significant details. Finding main ideas of while sections (not only single paragraphs) is taught, along with identifying relevant details.

Objective: 9.3.3

Given three (3) stories and nine (9) questions dealing with outline headings, the learner will select from four (4) choices the correct answer to each question (minimum 8).

Initial Presentation

The bell rings and it is time for reading. Tell students it is time to work on the reading skill of identifying main ideas in an outline. Explain to students that as they move through the middle grades, they are asked to deal with a greatly increased volume of written informational material. In order to sort out what they need and make it useful, they must be able to pick out main ideas, subtopics, and smaller topics to serve their purpose. Remind children that an important point to realize is that active thinking when reading helps both understanding and retention. Tell the students to get out their reading books (braille and large print), and their writing equipment (braille writers and/or pencils and paper).
Read and explain the objective, including the mastery criterion, to the students. Let the students copy the objective from dictation, and have them keep it in their notebook. Emphasize that they are going to learn to identify main ideas in an outline.

State the five (5) summary parts pertaining to outlines: using headings to help one understand how ideas are organized, recognizing main ideas and noting the details that support them, watching for signals that help one find the main ideas, recognizing paragraphs that make transitions between one topic and another, and watching for paragraphs that summarize. Give the students a model outline (braille and/or large print). Review the model calling attention to the main headings and sub-headings. Explain indention in making an outline to the student. Ask students to explain the indention in outlines to you. Call the student's attention to the outline form in the books (braille and/or large print). Ask students to explain how to use the form model. Reinforce students' responses and attending behavior.

Instruction and Practice

Provide the students with a practice session. Usually the time allowed for a braille student should be at least double that for a print student. There will, of course, be variations of time requirement depending on the students. The teacher should use his or her own judgment. The students are given several paragraphs to read. Let children read paragraphs and think what the topic is. Ask the question, "What are the sentences about?" Once the topic is agreed on, have them go back to find the main idea. While children are working, check with each one individually to see if they are having difficulty, and provide them with corrective feedback. After the main idea is agreed on, have children find examples of details. Call attention to what details add to the meaning, noting their different uses: make main ideas clear; give examples; supply additional information; give evidence to prove a point. After students have completed this activity, provide them with a practice outline to use.

While the students are completing the outlines, provide them with correction feedback. When they complete this practice session, review the correct answers. Let the students use model outlines during the initial practice sessions. (Approximate practice time: two 55-minute periods.)

Provide another practice session (one reading period) to identify main ideas in an outline. Feedback procedures should be given as described previously. Have students use a model outline. Provide as many practice sessions as are needed as described above, but gradually remove models. Review the steps to follow and indention procedures before each practice session. Continue to provide appropriate knowledge of results and reinforcement.

Oral and written recitation activities must be incorporated into instruction and practice. The activities should include outline models, worksheet forms, oral questions, and workbooks (braille and/or large print). Students should be asked to write and explain outlining main ideas. No model outline or help can be used during this recitation. Continue to provide corrective feedback and reinforcement during recitation. Students should complete the workbook on this skill where different selections on varying levels of difficulty offer much practice.

Evaluation

The initial presentation and instruction and practice activities described above will probably take ten (10) days, or an undetermined number of days to complete (one reading period per day). When the students are completing the activities with few errors, begin to evaluate the objective. The evaluation should take one reading period for two days. The evaluation will consist of a test on three stories, nine questions and four choices for the students (minimum 8). Written instructions (braille and/or large print), will be provided for students.

Generalization and Transfer

Review the procedure pertaining to identifying main ideas in an outline. Tell the students they will be tested again in a few days. Specify that you want them to be able to write an outline independently and, verbally state how to find main ideas, subtopics and smaller topics on a given story. Review the criteria of three stories, nine questions and four choices dealing with outline headings (minimum 8). Give the students a practice test. Plan half the practice time it took for original practice session learnings. The materials and activities should be different from the activities used for acquisition. Possible activities include:

1. Outlining a unit in social studies
2. Outlining a science unit
3. Writing a biographical sketch.

Evaluate for retention after these practice sessions.

The objective and scope of this lesson plan has two transfer tasks. First, student should be able to write main ideas (outline form) in other subject areas. Second, student should be able to organize ideas in day to day activities. An example activity is a report on a special show or play (e.g., "Holiday On Ice."). Describe the overlap between the old and the new tasks. Stress that students need to learn how to identify main ideas in summarizing new situations.

Sample Teaching Outline

Malaya's Problems

- I. Education
    - A. Crowded schools
    - B. Need for teachers
- II. Health
    - A. Widespread diseases
    - B. Need for health workers
        - 1. Doctors
        - 2. Nurses
- III. Food
    - A. Improved farming
    - B. More fish and livestock

Sample Outline Form

(Title)

I.
  A.
  B.
II.
  A.
  B.
III.
  A.
  B.

Sample Practice Story

1. No one yet knows just how men began to make fire themselves, but scientists believe that it happened very early in history. They say that it must have come about as a result of the observation of sparks. Forest fires are spread by hot sparks blown by the wind. The early tool makers must have noticed that the rocks they chipped at often threw off similar sparks.

2. Early man found several very important uses for fire in his home. The first was as heat. Not being equipped with protective fur, man found fire extremely useful during the long, cold winter nights. Built under the shelter of a rock overhang or inside a cave, a fire gave a cozy warmth. It also produced light, and light gave more meaning to the long, dark nights. It was probably by firelight that the first artists in history painted the wonderful pictures which have been found in prehistoric caves. This light also enabled the women to make clothes and the men to chip weapons. It shut out the cold and darkness and created, for the first time in history, a home for a family.

3. Fire performed another valuable function, as well. All wild animals, including those that were dangerous to man, were deathly afraid of the blazing heat which singed fur and caused pain and death. So fire was perhaps man's first defensive weapon. But there were other and more important uses of fire yet to come.

4. It seems quite natural today to use fire to supply the heat needed to cook food, but it undoubtedly took a great many years before early man learned to use fire in that way. Perhaps it came about accidentally when some raw meat fell into a fire, or maybe hunters found the burned bodies of animals after a forest fire. Whatever the method of discovery, the use of fire for cooking was extremely important in the history of man.

Questions

Choose and underline the correct answer to each question.

1. What is a good title for the story?

   A. How Man Learns to Use Fire

   B. Early Man's Use of Fire

   C. Discovery of a Useful Weapon

   D. Observation of Fire Sparks

2. What is the topic of the first paragraph?

   A. How man discovered fire

   B. How scientists discovered fire

   C. How toolmakers discovered fire

   D. How winds started fires

3. What is one way man learned to make fire?

   A. Perhaps from animals

   B. Perhaps from toolmakers

   C. Perhaps learned from scientists

   D. Perhaps learned from forest fires

4. What is another way man learned to make fire?

   A. Perhaps learned from sparks from chipping rocks

   B. Perhaps learned from lightning

   C. Perhaps learned from rubbing sticks

   D. Perhaps learned from each other

5. What is the second main topic of the story?

   A. Man's misuses of fire

   B. Man's uses of fire

   C. Man causes fire

   D. Man puts out fires

6. What is the first use of fire in paragraph 2?

   A. Defense

   B. Cold

   C. Heat

   D. Killing

7. What is a second use of fire in paragraph 2?

   A. Light

   B. Weapon

   C. Tool

   D. Warming

8. What is an important use of fire in paragraph 3?

   A. Defense against man

   B. Defense against weather

   C. Defense against animals

   D. Defense against sportsmen.

9. What is another use of fire in paragraph 4?

   A. Heating

   B. Lighting

   C. Destroying

   D. Cooking

Sample Test

9.3.3 Directions: Read the following story carefully. It describes five different bicycles that appeared in the history of this interesting machine. Answer each of the nine questions at the end of the story by selecting one of the four choices. After you have finished reading the story and answering the questions, outline the story giving five main headings and the subtopics for each. Use the title of the story for the title of your outline.

The Two-Wheeler

When we hop on a bicycle today, we can hardly imagine a time when there were no bicycles. One of the first bicycles was the "walk-along." It was called by this name because the rider had to push against the ground with his feet to make the bicycle move.

The "walk-along" had two wheels, a crossbar, and a steering bar. The wheels were made of wood and had spokes. The cross-bar, made of wood, too, ran the length of the machine and held the wheels together. The steering bar was new, since the very first bicycle could turn neither to the right nor to the left.

Another early bicycle, called the "bone-shaker," was made around 1865. This bicycle had wooden wheels with steel tires. If we can imagine riding one of these, we can readily understand how the bicycle got its name. Pedals were used for the first time on this machine. The rider no longer had to push against the ground to make the bicycle move. Now his shoes did not wear out so quickly, and he did not tire so easily.

One of the funniest bicycles ever built came into use in 1873. It had a tremendous front wheel, almost as tall as a man, from which it got its name - "the high wheeler." As was true of the "bone-shaker," pedals were used to turn the front wheel. However, the rubber tires on the "high wheeler" gave a smoother ride than that of earlier bicycles.

The seat on the "high wheeler" was very high and, as a rule, the rider had a hard time mounting it. This bicycle fell over easily, giving the rider many a spill. Directions with the bicycle told him how to fall so that he would not get hurt!

Shortly after 1880, changes were made to lower the bicycle and make it safer. The "safety" bicycle, as it was called, had two wheels alike. The back wheel was driven by a chain hooked on to pedals easily reached by the rider's feet. This bicycle had air-filled tires, spring saddle seat, and chain drive.

A few more safety ideas have been added, such as the chain guard lights, and a bell. The guard keeps the chain clean and protects the rider's clothes from getting caught. Because of the lights, the rider can now see and be seen at night. The bell gives warning of the bicycle's approach to people on foot and other riders.

Questions

1. What was the first bicycle in the story?
   - A. Walk-along
   - B. Bone-shaker
   - C. Safety
   - D. High-wheeler
2. What one thing made the "boneshaker" a better bicycle?
   - A. Steel wheels
   - B. Chain drive
   - C. Pedals
   - D. Lights
3. Which bicycle came after the high wheeler?
   - A. Today's bicycle
   - B. Safety
   - C. Walk-along
   - D. Bone-shaker
4. What does today's bicycle have?
   - A. Wooden wheels
   - B. Wooden crossbar
   - C. Large front wheel
   - D. Different speeds
5. What was one feature of the high wheeler?
   - A. Two wheels alike
   - B. Tremendous front wheel
   - C. Air-filled tires
   - D. Bell

6. Which bicycle did the rider have a hard time getting on?

   A. Bone-shaker

   B. Walk-along

   C. High wheeler

   D. Safety

7. What was changed to make the "safety" bicycle ride smoother?

   A. Air-filled tires

   B. Rubber tires

   C. Saddle seat

   D. Lights

8. Which bicycle came before today's bicycle?

   A. High-wheeler

   B. Safety

   C. Bone-shaker

   D. Walk-along

9. What is the best title for this story?

   A. Bicycles

   B. Changes in bicycles

   C. The Two-Wheeler

   D. Early bicycles

Lesson Plan

Scope

The following lesson plan teaches the learner to identify summaries.

Objective: 10.3.2

The learner will identify summaries. Given three (3) selections with four (4) main ideas and summary questions for each, the learner will select from three (3) choices the correct answer to each question (minimum: 11).

Initial Presentation

Read and explain the objective, including the mastery criteria to the students. Tell them that for the next few days they will be learning about summaries and will continue to use this knowledge throughout the year. A summary lists the key points presented in a reading selection. It is a short account of the author's main ideas and the details without which the reader could not clearly understand the meaning.

Choose several short, interesting articles from a favorite magazine or newspaper. Read one at a time orally to the students. Help them make a summary sentence of each article. Record these sentences for future reference.

Instruction and Practice

Divide students into small groups and present each group with two (2) short articles in large print or braille. Let one student read the article while the others listen. After the article has been read the students will write a summary sentence of the article. Move among the groups and offer help when needed. Students may exchange articles and write summary sentences for those articles also. Reinforce students' responses.

Give each student a different article written in large print or braille. Let each student read his/her article silently and write a summary sentence. Check each student's work individually and give corrective feedback when necessary.

Evaluation

The initial presentation and instruction and practice activities will probably take five to six (5-6) days to complete. Each session will probably last forty to forty-five (40-45) minutes per day. When the students are writing summaries that are appropriate to the articles, begin to evaluate the objective. See attached evaluation sheet.

Generalization and Transfer

Throughout the lesson emphasis will be placed on the use of summaries in other situations such as giving reviews of books and magazine articles read, movies seen, and writing resumes.

Remind the students that the main point of a paragraph is often the first or last sentence.

Students will be able to use knowledge gained from this lesson in social studies and science work.

Name______________________________________ Date______________________

Summary Identification Test

Read the articles and follow the directions after each:

1. Theodore Roosevelt, the twenty-sixth president of the United States, was born in New York City on October 27, 1858. Part of his prosperous family were of Dutch ancestry. They gave a great deal of money and time to philanthropic endeavors. Teddy, as he was called, was almost born to be a politician. His father was active in politics and his mother's great-grandfather was the first governor of Georgia when the colonies became independent.
2. As a small boy young Theodore was not too vigorous, but through determination he developed his body until it was physically strong. However, he was never able to overcome one physical defect, his weak eyes. Boxing lessons and gymnastics developed his muscles and body.
3. After graduating from Harvard, young Roosevelt was undecided as to what career to choose. His interests were quite varied and his desire to have a part in everything made him hesitate to choose any single career for fear that this might keep him from his other interests. It was for this reason that he chose politics and government.

1. What is the main idea of the first paragraph? Choose one of the following and underline it.
    1. Roosevelt's family was of Dutch ancestry
    2. Roosevelt's family background
    3. Roosevelt came from an early American family.
2. Underline the main idea of the second paragraph.
    1. Teddy was a boxer as a boy.
    2. Teddy was never able to overcome one weakness, his eyes.
    3. Teddy developed his body until it was physically strong.
3. Underline the main idea of the third paragraph.
    1. Because of his varied interests, he chose politics as a career.
    2. Roosevelt really did not want a career.
    3. He was determined to be a politician.
4. Underline the best title for the article.
    1. Young Roosevelt, the politician
    2. The twenty-sixth president of the United States
    3. Roosevelt's family

1. *A rare item in demand usually becomes expensive.* Diamonds are among the most costly gems in the world, mostly because they are rare. Most of the diamonds are found in Africa. However, a small supply is found in Brazil and India.
2. The diamond is the hardest substance known. In composition, it is almost pure carbon formed into crystals. It is almost impossible to cut a diamond. The only thing that will cut a diamond is another diamond. Jewelers break diamonds into smaller pieces by a sudden, skillfully calculated stroke.
3. Diamonds serve many other purposes in addition to adorning rings and brooches. For centuries they have been used to cut glass of all types. Industry uses these precious gems with many of their industrial tools, sometimes grinding them into dust and baking them into the steel. Incidentally, many record machines today are equipped with permanent diamond record needles.

Questions

1. What is the main idea of the first paragraph? Choose one of the following and underline it.
    1. Diamonds are very expensive.
    2. Most diamonds are found in Africa.
    3. Any rare item is expensive.
2. Underline the main idea of the second paragraph.
    1. The diamond is the hardest substance known.
    2. Diamonds are almost pure carbon.
    3. Diamonds cannot be cut.

3. Underline the main idea of the third paragraph.
    1. Diamonds are used to cut glass.
    2. Industrial tools are made of diamonds.
    3. Diamonds have many uses.
4. Underline the best title for the article.
    1. Costly Diamonds
    2. An Unusual Gem
    3. Uses of Diamonds

1. Birds were making long flights before airplanes were even invented. They fly farther than most of us do now. Few people fly to South America every year, yet millions of birds do.
2. Nighthawks go from northern Canada down to Argentina while the golden plovers go from Labrador to Argentina. 3,400 miles of this flight is non-stop over the Atlantic Ocean.
3. The champions are the Arctic terns. These water birds fly from close to the North Pole down across the equator to the cold seas near the Antarctic region. The distance is 11,000 miles or about four times the width of the United States.
4. Birds fly at many different speeds. The herons, ravens, shrikes, and horned larks are the slowest, traveling up to 30 miles an hour. Starlings are faster, and ducks and geese can go up to 60 miles an hour. The fastest birds are the swifts. They usually fly at 70 to 100 miles an hour, but can fly faster if they wish to put on extra speed.

Questions

1. Underline the best title for the story.
    1. Habits of the Birds
    2. Air Travelers
    3. The Sunny South
2. Underline the sentence that best summarizes the main idea of the first paragraph.
    1. Birds are long-distance flyers.
    2. Few people fly to South America.
    3. Birds fly farther than people.

CHAPTER EIGHT

THE HEALTH DOMAIN

Broad Skills, Enabling Skills,

Specific Skills, and Record Sheet

Health Domain

Level 4

Growth and Development

Level	Pre-Test	Post-Test		Growth and Development
4	____	____	4.1.1.0.	Demonstrate understanding of the cellular basis of body structure and inherited and acquired characteristics
	____	____	4.1.1.1.	Identify cells as the basic parts of the body and all living things
	____	____	4.1.1.2.	Describe cell structure
	____	____	4.1.1.3.	Describe the growth process
	____	____	4.1.1.4.	Explain how people inherit traits from their parents; use terms chromosomes and genes
	____	____	4.1.1.5.	Discriminate between inherited and learned characteristics
	____	____	4.1.1.6.	Explain how the things people can do affect some of their traits
	____	____	4.1.2.0.	Demonstrate understanding of the physiological basis for healthy body function during activity.

Level	Pre-Test	Post-Test		Growth and Development
	____	____	4.1.2.1.	Describe the functions of joints, and ligaments
	____	____	4.1.2.2	Describe the structure of a bone
	____	____	4.1.2.3.	Explain how muscles move bones
	____	____	4.1.2.4.	Describe the effects of exercise on muscles
	____	____	4.1.2.5.	Explain how the lungs and heart function and how they help move the body
	____	____	4.1.3.0.	Growth and Development Test - 70% Accuracy
	____	____	4.1.3.1.	Describe how people use seeing and hearing to get information from the world
4	____	____	4.1.3.2.	Tell how taste and smell are related
	____	____	4.1.3.3.	Describe how touch and inner senses supply information about the immediate state of the body
	____	____	4.1.4.0	Growth and Development Test - 70% Accuracy
	____	____	4.1.4.1	Explain how the body adjusts to temperature changes
	____	____	4.1.4.2.	Explain physical adaptation
	____	____	4.1.4.3	Describe ways of adapting

Level	Pre-Test	Post-Test		Health and Safety
4	_____	_____	4.2.1.0	Demonstrate understanding of how bacteria and viruses can cause communicable diseases. Health and Safety Test 70% Accuracy.
	_____	_____	4.2.1.1.	Children will tell how baceteria are helpful
	_____	_____	4.2.1.2.	Describe how bacteria and viruses cause infection and disease
	_____	_____	4.2.1.3.	Explain the concept of communicable disease
	_____	_____	4.2.1.4	Identify methods of transmission of disease microbes
	_____	_____	4.2.2.0.	Demonstrate understanding of how one can guard against disease Health and Safety Test - 70% Accuracy
	_____	_____	4.2.2.1.	Define resistance
	_____	_____	4.2.2.2.	Tell how eating the right foods can help fight disease
	_____	_____	4.2.2.3.	Describe other ways of keeping well
	_____	_____	4.2.2.4	Describe ways of avoiding microbes
	_____	_____	4.2.3.0.	Demonstrate understanding of how to prevent accidents and perform first aid Health and Safety Test 70% Accuracy
	_____	_____	4.2.3.1.	Identify causes of minor burns
	_____	_____	4.2.3.2	Explain preventive remedial measures for minor burns

Level	Pre-Test	Post-Test		Health and Safety
	____	____	4.2.3.3.	Identify causes of small cuts and similar injuries
	____	____	4.2.3.4.	Explain preventive and remedial measures for small cuts and similar injuries
	____	____	4.2.3.5.	Identify causes of broken bones
	____	____	4.2.3.6.	Explain preventive and remedial measures for broken bones
	____	____	4.2.4.0.	Demonstrate understanding of how to prevent accidents outside the home Health and Safety Test 70% Accuracy
	____	____	4.2.4.1.	Identify causes for accidents in play activities and on holidays
4	____	____	4.2.4.2.	Explain preventive measures for activities and on holidays
	____	____	4.2.4.3.	Identify causes for water-related accidents
	____	____	4.2.4.4.	Explain preventive measures for water-related accidents
	____	____	4.2.4.5.	Identify causes for accidents that can occur when traveling
	____	____	4.2.4.6.	Explain preventive measures for accidents that occur while traveling

Level	Pre-Test	Post-Test		Social/Emotional Adjustment
4	____	____	4.3.1.0.	Demonstrate understanding that personality is all the characteristic responses an individual makes to his environment. Social/Emotional Adjustment Test - 70% Accuracy
	____	____	4.3.1.1.	Identify appearance as one component of personality
	____	____	4.3.1.2.	Explain that emotions and behavior are components of personality
	____	____	4.3.1.3.	Define personality
	____	____	4.3.2.0.	Demonstrate understanding that personality is influenced by heredity and environment. Social/Emotional Ajustment Test - 70% Accuracy
	____	____	4.3.2.1.	Recognize that heredity influences personality
	____	____	4.3.2.2.	Offer evidence of the influence of heredity on personality
	____	____	4.3.2.3.	Identify the environment as an influence on personality
	____	____	4.3.3.0	Demonstrate understanding of how families, friends, and society influence development of personality. Social/Emotional Adjustment Test - 70% Accuracy
	____	____	4.3.3.1.	Identify ways parents and siblings influence the personalities of individuals

Level	Pre-Test	Post-Test		Social/Emotional Adjustment
4	____	____	4.3.3.2.	Identify ways peers and groups influence the personalities of indviduals
	____	____	4.3.3.3.	Identify ways the society influences the personalities of individuals
	____	____	4.3.4.0.	Demonstrate understanding of how one can take responsibility for one's own social/emotional adjustment. Social/Emotional Adjustment Test 70% Accuracy
	____	____	4.3.4.1.	Identify ways individuals accept their physical differences
	____	____	4.3.4.2.	Identify ways individuals work to overcome handicaps
	____	____	4.3.4.3.	Identify ways one can measure one's strengths
	Community Health and Safety			
	____	____	4.4.1.0.	Demonstrate how one can contribute to the health and safety of the community Community Health and Safet Test - 70% Accuracy
	____	____	4.4.1.1.	Identify neighborhood situations in which the help of professional community service specialist is needed
	____	____	4.4.1.2.	Categorize neighborhood situations in which the help of community professional service specialists is needed

Level	Pre-Test	Post-Test		Community Health and Safety
4	____	____	4.4.1.3.	Suggest ways in which professionals avert health and safety problems and maintain the safety and health of people in the community
	____	____	4.4.1.4.	Evaluate the behavior of community residents
	____	____	4.4.2.0.	Demonstrate how one can develop wise buying habits. Community Health and Safety Test - 70% Accuracy
	____	____	4.4.2.1.	Identify buying as a decision making process requiring evaluation of real needs
	____	____	4.4.2.2.	List various forms of information available to consumers
	____	____	4.4.2.3.	Evaluate advertising messages for factual information and exaggerated claims
	____	____	4.4.3.0.	Demonstrate understanding of how to prevent harm to the environment. Community Health and Safety Test - 70% Accuracy
	____	____	4.4.3.1.	Form a simple definition of pollution
	____	____	4.4.3.2.	Identify actions that cause pollution
	____	____	4.4.3.3.	Identify ways community workers and recycling companies keep the environment clean

Level	Pre-Test	Post-Test	Community Health and Safety
4	____	____	4.4.3.4. Discuss ways actions contribute to the healthy state of one's environment.
	____	____	4.4.4.0 Demonstrate understanding of of how one prevents harm to one's self and others Community Health and Safety Test - 70% Accuracy
	____	____	4.4.4.1. Identify needs for rules that limit or prohibit behavior
	____	____	4.4.4.2. Discuss need for rules that limit or prohibit behavior
	____	____	4.4.4.3. Suggest effective ways of making sure that people follow rules
	____	____	4.4.4.4. Evaluate importance of good relations between enforcement personnel and members of the community
	Level 5 Body and Mind		
5	____	____	5.1.1.0 Demonstrate understanding of how basic life systems work together. Body and Mind Test - 70% Accuracy
	____	____	5.1.1.1. Tell how oxygen is provided to the body and why it is important
	____	____	5.1.1.2. Tell how food is provided to body cells and ways digestive system can affect feelings and actions
	____	____	5.1.1.3. Identify waste products and how body systems work to get rid of wastes.

Level	Pre-Test	Post-Test	Body and Mind
	_____	_____	5.1.2.0. Demonstrate understanding of how the nervous system controls the actions of the body Body and Mind Test - 70% Accuracy
	_____	_____	5.1.2.1. Tell how the brain controls body actions by means of the nerves
	_____	_____	5.1.2.2. Describe the functions of the voluntary and involuntary nervous systems
	_____	_____	5.1.2.3. Describe the functions of the sensory and motor nerves
	_____	_____	5.1.3.0. Demonstrate understanding of how physical condition can affect mind and emotions Mind and Body Test - 70% Accuracy
5	_____	_____	5.1.3.1. Tell what one's general physical condition has to do with thinking ability, mood and responses to other people
	_____	_____	5.1.3.2. Describe the time clock in the body and how it affects feelings at different times of the day
	_____	_____	5.1.3.3. Describe the effects that exercise and eating have on the mind and emotions
	_____	_____	5.1.4.0. Demonstrate understanding of how the way one thinks, and feels can affect one's physical state. Body and Mind Test - 70% Accuracy.

Level	Pre-Test	Post-Test	Body and Mind	
5	_____	_____	5.1.4.1.	Tell when body is likely to produce adrenalin and what changes adrenalin makes in the way one feels
	_____	_____	5.1.4.2.	Describe the effects worry, tension and fatigue have on the body
	_____	_____	5.1.4.3.	Identify kinds of life changes that precede physical illness; awareness of connection between mind and body
	Stress and Strength			
	_____	_____	5.2.1.0	Demonstrate awareness of kinds of stress and respond positively to physical and emotional stress. Stress and Strength Test - 70% Accuracy
	_____	_____	5.2.1.1.	Identify activities that cause physical stress
	_____	_____	5.2.1.2.	Identify causes and effects of emotional stress
	_____	_____	5.2.1.3.	Explain how some kinds of stress result in growth
	_____	_____	5.2.2.0.	Demonstrate awareness that a good diet can protect against stress; how to make well-balanced diet
	_____	_____	5.2.2.1.	Identify the food groups and give examples of foods in each group
	_____	_____	5.2.2.2.	Identify nutrients that the body requires for strength and health

Level	Pre-Test	Post-Test	Stress and Strength	
	____	____	5.2.2.3.	Describe consequences of a poor diet and tell what is done to help malnourished people
	____	____	5.2.3.0.	Demonstrate understanding of how microorganisms invade the body causing disease; how vaccination protects against infection. Stress and Strength Test - 70% Accuracy
	____	____	5.2.3.1.	Identify ways which microorganisims get into the body
	____	____	5.2.3.2.	Describe the body's defenses against microorganisms
	____	____	5.2.3.3.	Explain how immunity occurs
	____	____	5.2.3.4.	Explain how vaccination causes immunity.
5	____	____	5.2.4.0.	Demonstrate knowledge of ways to care for one's self when under the stress of illness. Stress and Strength Test - 70% Accuracy
	____	____	5.2.4.1.	Explain why special care is important when one is ill
	____	____	5.2.4.2.	Explain common nonprescription medicines' purposes and why they do not cure illness
	____	____	5.2.4.3.	Tell importance of reading medicine labels and identify possible side effects
	____	____	5.2.4.4.	Tell how one knows when to see a doctor

Level	Pre-Test	Post-Test		Needs
5	____	____	5.3.1.0	Demonstrate recognition that all people have needs; Classify needs as physical, social and psychological. Needs Test - 70% Accuracy
	____	____	5.3.1.1.	Identify physical needs and the need for safety
	____	____	5.3.1.2.	Discuss that people have needs that are not physical
	____	____	5.3.1.3.	Describe some social and psychological needs
	____	____	5.3.2.0.	Recognize that some needs must be satisfied before others. Needs Test - 70% Accuracy
	____	____	5.3.2.1.	Discuss Maslow's pyramid of needs and why the needs on the bottom are taken care of before those on the top
	____	____	5.3.2.2.	Discuss the need for loving and belonging
	____	____	5.3.2.3.	Define self esteem and tell why it is important.
	____	____	5.3.3.0.	Demonstrate understanding of how needs can cause feelings and actions; recognize no two people feel and act similarly. Needs test - 70% Accuracy
	____	____	5.3.3.1.	Explain how feelings can result from needs and identify needs which cause people to do things like lose their temper or boast

Level	Pre-Test	Post-Test	Needs
5	____	____	5.3.3.2 Describe ways people act in order to fill needs for belonging and friendship
	____	____	5.3.3.3. Recognize that everyone has a different personality
	____	____	5.3.4.0. Demonstrate a realization that everyone has unmet needs and their ability to deal with them constructively. Needs Test - 70% Accuracy
	____	____	5.3.4.1. Discuss ways to deal with unmet physical and social needs
	____	____	5.3.4.2. Discuss feelings people have as a result of success or failure and ways of coping with failure
	____	____	5.3.4.3. Explain why people express feelings in different ways in situations; discuss importance of showing and choosing appropriate ways to show feelings
	Conservation and Safety		
	____	____	5.4.1.0. Demonstrate appreciation of the role of technology and one's role in making sure food is plentiful and free from harmful substances. Conservation and Safety Test. 70% Accuracy
	____	____	5.4.1.1. Explain why large farms are necessary for modern food production; discuss advantages and disadavantages of pesticides

Level	Pre-Test	Post-Test		Conservation and Safety
5	____	____	5.4.1.2.	Tell how food can be kept from spoiling; identify dangers of food perserving methods
	____	____	5.4.1.3.	Explain what one can do to keep food safe and healthful
	____	____	5.4.2.0.	Demonstrate recognition of benefits of modern technology and understanding of negative aspects and ways to minimize them. Conservation and Safety Test - 70% Accuracy
	____	____	5.4.2.1.	Identify features of modern city which allow people to live healthier lives; discuss aspects of the modern city which are harmful to people's health
	____	____	5.4.2.2	Identify health benefits which result from improved transportation; discuss hazardous aspects of modern automobile travel
	____	____	5.4.3.0.	Demonstrate understanding that one's health depends on wise use of resources by society. Conservation and Safety Test - 70% Accuracy
	____	____	5.4.3.1.	Identify health benefits derived from the earth and recognize need for controlled land use to ensure future health
	____	____	5.4.3.2.	Identify health benefits of fresh water and recognize needs for maintaining clean water

Level	Pre-Test	Post-Test		Conservation and Safety
5	____	____	5.4.3.3.	Identify health benefits of green plants and wood products and recognize their health depends on preservation and wise use of growing things
	____	____	5.4.4.0.	Demonstrate understanding of the need to cooperate with groups seeking to help people live healthier lives. Conservation and Safety Test 70% Accuracy
	____	____	5.4.4.1.	Recognize the family as a working group for health and identify ways members of a family can use and benefit from community health services.
	____	____	5.4.4.2.	Discuss how groups formulate suggestions, rules, and laws to prevent pollution
	____	____	5.4.4.3.	Identify ways people work together to prevent waste and misuse of natural resources
			Level 6 Learning	
6	____	____	6.1.1.0.	Demonstrate recognition of the relationship between stimulus and response and understanding of the difference between learned and automatic responses. Learning Test - 70% Accuracy
	____	____	6.1.1.1.	Tell how some bodily functions are inborn and automatic

Level	Pre-Test	Post-Test		Learning
6	_____	_____	6.1.1.2.	Define conditioning
	_____	_____	6.1.1.3.	Identify ways one is conditioned to respond
	_____	_____	6.1.1.4.	Explain how habits are formed and how they become automatic
	_____	_____	6.1.2.0.	Demonstrate recognition of methods of learning and understanding of how methods combine in the development of learning skills. Learning Test - 70% Accuracy
	_____	_____	6.1.2.1.	Identify at least two ways of learning independently
	_____	_____	6.1.2.2.	Constrast functions of the left and right hemispheres of the brain
	_____	_____	6.1.3.0	Demonstrate comprehension of how habits are formed and changed; set goals and plan time to facilitate good habit formation. Learning Test - 70% Accuracy
	_____	_____	6.1.3.1.	Describe how habits are formed and how they can be changed
	_____	_____	6.1.3.2.	Identify the need to establish priorities and plan time
	_____	_____	6.1.3.3.	Apply knowledge of forming habits and planning time to the development of good study habits

Level	Pre-Test	Post-Test	Learning
6	____	____	6.1.4.0. Demonstrate awareness that health care and character development help to become healthy adults; assess personal preferences and aptitudes to help formulate goals for the future. Learning Test - 70% Accuracy
	____	____	6.1.4.1. Give reasons why developing healthy habits is important to physical health
	____	____	6.1.4.2. Explain importance of making a decision to learn on their own and tell how independent decision-making helps build character
	____	____	6.1.4.3. Explain the importance of interests, attitudes, aptitudes and values in setting and achieving goals
	Body Responses		
	____	____	6.2.1.0. Demonstrate understanding of how bodies grow and change, especially during adolescence Body Response Test - 70% Accuracy
	____	____	6.2.1.1. Tell why hormones are called chemical messengers
	____	____	6.2.1.2. Describe the function of the pituitary gland
	____	____	6.2.1.3. Explain that individuals grow at their own pace; the pattern of growth is general for boys and girls

Level	Pre-Test	Post-Test	Body Responses
6	____	____	6.2.1.4. Describe the pituitary gland and gonads and their influence during puberty
	____	____	6.2.1.5. Compare and contrast physical development of adolescent girls and boys
	____	____	6.2.2.0. Recognition of relationship between proper eating habits and good health
	____	____	6.2.2.1. Explain why people need nutrients. Body Responses Test - 70% Accuracy
	____	____	6.2.2.2. Discriminate between internal and external motivations for eating
	____	____	6.2.2.3. Describe ways people influence eating habits
	____	____	6.2.3.0. Demonstrate understanding of relationship between exercise and health. Body Responses Test - 70% Accuracy
	____	____	6.2.3.1. Explain why physical activity is necessary
	____	____	6.2.3.2. Identify relationship between exercise and the development of strength, suppleness, and stamina
	____	____	6.2.3.3. Tell how exercise can help relieve tension
	____	____	6.2.3.4. Explain why different people need different amounts of exercise
	____	____	6.2.4.0. Demonstrate understanding of relationship between getting tired and staying healthy; explain why people need sleep. Body Responses Test

Level	Pre-Test	Post-Test	Body Responses
	____	____	6.2.4.1. Explain how fatigue helps the body stay healthy
	____	____	6.2.4.2. Describe current theory on the cause of sleep
	____	____	6.2.4.3. Identify changes one's body and mind go through during the first four stages of sleep
	____	____	6.2.4.4. Explain the significance of rapid eye movement and why dreaming is important
	____	____	6.2.5.0. Demonstrate understanding of ways drugs can make one's body respond and why drugs are dangerous
	____	____	6.2.5.1. Define drug, habit, tolerance and addiction
6	____	____	6.2.5.2. Identify ways alcohol and barbituates can harm bodies and why they are dangerous
	____	____	6.2.5.3. Identify ways caffeine and amphetamines can affect one's body
	____	____	6.2.5.4. Describe how the body responds to cigarettes, marijuana and LSD
	____	____	6.2.6.0. Demonstrate understanding of how the environment, the disease agent, and the host work to promote infections Body Responses Test - 70% Accuracy
	____	____	6.2.6.1. Discriminate between infectious and noninfectious disease

Level	Pre-Test	Post-Test		Body Responses
6	____	____	6.2.6.2.	Describe three things that happen before someone catches an infectious disease
	____	____	6.2.6.3.	Describe three factors that can lead to noninfectious disease
				Social/Emotional Adjustment
	____	____	6.3.1.0.	Demonstrate recognition that satisfaction is inherent in growth mastery. Social/Emotional Adjustment Test - 70% Accuracy
	____	____	6.3.1.1.	Explain difference between extrinsic and intrensic rewards
	____	____	6.3.1.2.	Describe how mastering the tools and resources is a sign of growth
	____	____	6.3.1.3.	Tell how appropriate choices are based on self-evaluation and sensible risk-taking.
	____	____	6.3.2.0.	Demonstrate understanding of competition and cooperation
	____	____	6.3.2.1.	Describe how competition can assist in increasing achievement and stretching abilities
	____	____	6.3.2.2.	Identify ways personal gains may be increased through cooperation
	____	____	6.3.2.3.	Tell how group members can achieve more than individuals

Level	Pre-Test	Post-Test		Social/Emotional Adjustment
6	____	____	6.3.3.0.	Demonstrate understanding that working with others involves a reciprocal relationship. Social/Emotional Adjustment Test - 70% Accuracy
	____	____	6.3.3.1.	Describe how leadership in a group is determined by structure and goals of the group
	____	____	6.3.3.2.	Explain the importance of group followers
	____	____	6.3.3.3.	Identify the strength of group pressure and importance of knowing when to act independently.
	____	____	6.3.4.0.	Demonstrate recognition of the importance of developing inner strengths. Social/ Emotional Adjustment Test 70% Accuracy
	____	____	6.3.4.1.	Explain that identities are based on what one thinks of one's self and what others think of him/her.
	____	____	6.3.4.2.	Explain that one's values are derived from parents, peers, and one's perception of reality
	____	____	6.3.4.3.	Explain that human growth involves the ability to delay gratification
				Health
	____	____	6.4.1.0.	Make wise choices about health care services. Health Test - 70% Accuracy

Level	Pre-Test	Post-Test	Health
6	____	____	6.4.1.1. Identify ways people can get health care in the U.S.
	____	____	6.4.1.2. Identify ways health care services are provided in a developing nation
	____	____	6.4.1.3. Compare and contrast health care services in a developing nation with those in the U.S.
	____	____	6.4.1.4. Tell how health care services are provided in a country with national health insurance
	____	____	6.4.2.0. Demonstrate awareness of the effects of social change on society. Health Test - 70% Accuracy
	____	____	6.4.2.1. Relate how society changes and what causes changes
	____	____	6.4.2.2. Describe how changes affect one's life
	____	____	6.4.2.3. Explain how one can adapt and adjust to change
	____	____	6.4.3.0. Demonstrate understanding that the best use of technology depends on wise decisions
	____	____	6.4.3.1. Describe new health services and how technology made these possible
	____	____	6.4.3.2. Explain how technology can be used to improve the environment
	____	____	6.4.3.3. Recognize that technological advances change the world

Level 7

Health

Level	Pre-Test	Post-Test		Health
7	____	____	7.1.1.0.	Demonstrate understanding that health is the result of interaction between social, mental, and physical factors Health Test - 70% Accuracy
	____	____	7.1.1.1.	Identify example of interaction of mental-emotional, and social health factors
	____	____	7.1.1.2.	Examine popular beliefs about health to determine validity
	____	____	7.1.1.3.	Accept a share of social responsibility
	____	____	7.1.2.0.	Demonstrate knowledge that the body is organized into specialized parts. Health Test - 70% Accuracy
	____	____	7.1.2.1.	Learn names of body systems, functions and health practices
	____	____	7.1.2.2.	Recognize benefits to health which result from improved habits
				Daily Needs
	____	____	7.2.1.0.	Demonstrate understanding that individuals are interdependent with the environment from which they obtain nutrients. Daily Needs Test 70% Accuracy
	____	____	7.2.1.1.	Become acquainted with the nutrients needed for good health

Level	Pre-Test	Post-Test		Daily Needs
7	____	____	7.2.1.2.	Classify foods according to whether they supply energy, growth and repair, or provide regulation of cell activities
	____	____	7.2.1.3.	Become acquainted with large variety of foods locally available and the nutrients they supply
	____	____	7.2.1.4.	Consider a variety of foods necessary to supply essential nutrients
	____	____	7.2.1.5.	Realize that poor eating habits result in poor health, lack of energy, and poor appearance
	____	____	7.2.1.6.	Knowledge of nutrition to improve present eating habits
	____	____	7.2.1.7.	Be aware of family and other influences on dietary habits
	____	____	7.2.2.0.	Demonstrate knowledge that foods must provide a chemical balance to maintain health
	____	____	7.2.2.1.	Plan and select a balanced daily diet
	____	____	7.2.2.2.	Schedule daily breakfast which includes ½ of a day's protein requirements
	____	____	7.2.2.3.	Attempt to overcome dislikes that are based on emotion
	____	____	7.2.2.4.	Recognize the social and emotional causes and dangers of overweight and underweight

Level	Pre-Test	Post-Test		Daily Needs
7	____	____	7.2.2.5.	Know one's proper weight and amounts of food needed to maintain the weight
	____	____	7.2.2.6.	Choose between-meal snacks which provide essential nutrients
	____	____	7.2.2.7.	Recognize food fads and quack diets
	____	____	7.2.3.0.	Demonstrate an understanding that to stay healthy, one is dependent on the environment
	____	____	7.2.3.1.	Discriminate changes in the environment caused by people
	____	____	7.2.3.2.	Relate changes in the environment to one's daily health needs
	____	____	7.2.3.3.	Be aware of the vital importance of safe food, clean water and clean air for good health
	____	____	7.2.3.4.	Conserve our fresh water supply
	____	____	7.2.3.5.	Accept responsibility for disposing of potential air and water pollutants
	____	____	7.2.3.6.	Support antipollution legislation
	____	____	7.2.3.7.	Educate other members of the community concerning the dangers of air and water pollution

Level	Pre-Test	Post-Test	Daily Needs
7	____	____	7.2.3.8. Support scientific research intended to improve the safety of food, water and air
			Fitness
	____	____	7.3.1.0. Demonstrate knowledge that physical fitness is maintained by regular exercise. Fitness Test - 70% Accuracy
	____	____	7.3.1.1. Recognize the value of physical activity in keeping fit
	____	____	7.3.1.2. Develop impoved strength, endurance, agility, grace, and poise
	____	____	7.3.1.3. Include some physical activities in each day's schedule
	____	____	7.3.1.4. Participate in physical recreation for relaxation and enjoyment
	____	____	7.3.1.5. Choose an enjoyable sport and work to improve skills
	____	____	7.3.2.0. Demonstrate understanding of fitness as being dependent upon maintaing health of the skeletal system. Fitness Test - 70% Accuracy
	____	____	7.3.2.1. Understand that bone is a living part of the body
	____	____	7.3.2.2. Include sufficient calcium, phosphorus, and Vitamin D in diet.

Level	Pre-Test	Post-Test	Fitness
7	____	____	7.3.2.3. Include exercise and rest in the daily routine for healthy bone growth
	____	____	7.3.2.4. Develop and maintain good posture
	____	____	7.3.2.5. Recognize that skeletal growth may call for posture adjustments
	____	____	7.3.2.6. Choose shoes and socks which fit properly
	____	____	7.3.3.0. Demonstrate understanding that vital body functions depend on muscle action
	____	____	7.3.3.1. Accept one's body build and select complementary clothes
	____	____	7.3.3.2. Get proper amount of exercise
	____	____	7.3.3.3. Develop good posture to avoid muscle strain
	____	____	7.3.3.4. Recognize muscle fatigue
	____	____	7.3.3.5. Use muscles efficiently when performing tasks
	____	____	7.3.3.6. Work and play carefully to avoid muscle strain
	____	____	7.3.3.7. Obtain medical advice in the event of major injury to muscles, tendons, or ligaments
	____	____	7.3.3.8. Obtain sufficient sleep to overcome muscle fatigue

Level	Pre-Test	Post-Test	Fitness
	____	____	7.3.3.9. Allow time for mind and body relaxation
	____	____	7.3.4.0. Demonstrate awareness that appearance contributes to physical, mental and social fitness
	____	____	7.3.4.1. Accept one's physical features and concentrate on improving aspects of appearance
	____	____	7.3.4.2. Construct a checklist for improving daily grooming practices
	____	____	7.3.4.3. Identify health behavior
	____	____	7.3.4.4. Recognize the important functions of clean skin
	____	____	7.3.4.5. Use cosmetics with discretion
7	____	____	7.3.4.6. Sunbathe for sensible period of time
	____	____	7.3.4.7. Recognize common skin problems and help prevent infection
	____	____	7.3.4.8. Consult a physician for serious skin problems
	____	____	7.3.4.9. Keep fingernails and toenails clean and trim
	____	____	7.3.4.10. Understand structure and function of teeth and causes of dental caries
	____	____	7.3.4.11. Reduce consumption of sweets and brush after meals

Level	Pre-Test	Post-Test	Fitness
7	____	____	7.3.4.12. Visit a dentist regularly
	____	____	7.4.4.13. Wear comfortable shoes
	____	____	7.3.5.0. Demonstrate understanding that participation in sports contributes to physical, mental and social fitness Fitness Test - 70% Accuracy
	____	____	7.3.5.1. Appreciate the values of a wide variety of sports
	____	____	7.3.5.2. Learn to play and work well with others
	____	____	7.3.5.3. Develop sufficient skills in sports to make participation satisfying
	____	____	7.3.5.4. Accept victory and defeat in a sportsman-like manner
	____	____	7.3.5.5. Recognize safety rules for sports and abide by them
	____	____	7.3.5.6. Be responsible for personal and others safety
	____	____	7.3.5.7. Respect the water as a facility for recreation and as a potential hazard
	____	____	7.3.5.8. Be capable of good judgment in a water rescue attempt
	____	____	7.3.5.9. Be capable of giving artificial resuscitation
	____	____	7.3.6.0. Demonstrate understanding that the functioning of the sense organs improves with the environment

Level	Pre-Test	Post-Test	Fitness
7	____	____	7.3.6.1. Understand basic anatomy and function of the eye and ear
	____	____	7.3.6.2. Protect residual eyesight by habits of cleanliness and sufficient amounts of Vitamin A
	____	____	7.3.6.3. Avoid eye strain by using adequate lighting when reading
	____	____	7.3.6.4. Know types of services provided by eye specialists and have regular examinations
	____	____	7.3.6.5. Recognize signs of eye trouble and seek medical assistance
	____	____	7.3.6.6. Avoid ear infections and damage
	____	____	7.3.6.7. Seek medical assistance for ear infections or loss of hearing
	____	____	7.3.6.8. Recognize pain as a symptom of disease or body deficiency
	____	____	7.3.6.9. Use all sense organs in communicating with others and adapting to the environment
	____	____	7.3.7.0. Demonstrate knowledge that individual senses interpret and respond to the environment
	____	____	7.3.7.1. Understand the functions of the nervous system in maintaining good health and in adapting to the environment

Level	Pre-Test	Post-Test	Fitness	
7	____	____	7.3.7.2.	Guard against injury to the nervous system
	____	____	7.3.7.3.	Seek prompt medical assistance for symptoms which might indicate disease of the nervous system
	____	____	7.3.7.4.	Obtain immunizations available to prevent diseases
	____	____	7.3.7.5.	Develop emotional habits which relax the nervous system
	____	____	7.3.7.6.	Adjust to stress in the environment
	____	____	7.3.7.7.	Avoid the use of chemical stimulants in combating fatigue
	____	____	7.3.7.8.	Recognize fatigue as an indication of the body's need for rest
			Body Systems	
	____	____	7.4.1.0.	Demonstrate understanding that health is based on cell activity. Body Systems Test - 70% Accuracy
	____	____	7.4.1.1.	Recognize that all cells require energy
	____	____	7.4.1.2.	Maintain living habits by which cells can obtain food and oxygen for metabolism

Level	Pre-Test	Post-Test	Body Systems
7	____	____	7.4.1.3. Understand that hereditary characteristics are determined by chromosomes
	____	____	7.4.1.4. Explain why even a single cell from a body is unique
	____	____	7.4.2.0. Demonstrate knowledge that the digestive system converts food into energy
	____	____	7.4.2.1. Understand the functioning of the digestive system
	____	____	7.4.2.2. Avoid food which can give indigestion
	____	____	7.4.2.3. Drink plenty of water and chew food carefully
	____	____	7.4.2.4. Do not overload the digestive system with too much food
	____	____	7.4.2.5. Eat sufficient roughage to stimulate peristalsis and regular elimination of waste
	____	____	7.4.2.6. Cook starches thoroughly; cook fish and eggs; avoid excessive fats
	____	____	7.4.2.7. Wash all vegetables and fruits before eating
	____	____	7.4.2.8. Cook vegetables and fruits tightly covered to preserve vitamins
	____	____	7.4.2.9. Relax before, during and after meals to allow proper digestion
	____	____	7.4.2.10. Wash hands after using the bathroom

Level	Pre-Test	Post-Test	Body Systems
7	____	____	7.4.2.11. Establish a regular, relaxed time for elimination of solid wastes from the body
	____	____	7.4.2.12. Avoid the use of laxatives
	____	____	7.4.2.13. Consult a doctor about persistent diarrhea, pain in the abdomen, vomiting, or bleeding hemorrhoids
	____	____	7.4.2.14. Recognize symptoms of appendicitis
	____	____	7.4.2.15. Avoid eating when emotionally upset
	____	____	7.4.2.16. Avoid alcohol, tobacco and drugs not prescribed
	____	____	7.4.2.17. Avoid all poisons, read labels and be familiar with first aid
	____	____	7.4.3.0. Demonstrate understanding of the respiratory system. Body Systems Test - 70% Accuracy
	____	____	7.4.3.1. Obtain plenty of fresh air and exercise
	____	____	7.4.3.2. Develop a habit of breathing through the nose
	____	____	7.4.3.3. Avoid laughing or talking while eating
	____	____	7.4.3.4. Cover nose and mouth with a cloth filter when doing dusty or dirty work
	____	____	7.4.3.5. Know how to give first-aid for a lodged object in the respiratory system

Level	Pre-Test	Post-Test	Body Systems
	____	____	7.4.3.6. See a doctor for persistent sore throat, fever, colds or coughs
	____	____	7.4.3.7. Do not use cold or cough remedies without a doctor's advice
	____	____	7.4.3.8. Wear clothing which does not restrict the breathing apparatus
	____	____	7.4.3.9. Avoid emotional upsets which may interfere with respiration
	____	____	7.4.3.10. Avoid smoking
	____	____	7.4.3.11. Provide sufficient moisture in the house when artifical heating dries out the air
7	____	____	7.4.3.12. Accept responsibility as a member of society to reduce air pollution
	____	____	7.4.3.13. Avoid contact with people who have colds
	____	____	7.4.3.14. Cover the nose and mouth when sneezing
	____	____	7.4.3.15. Have a yearly tuberculin test
	____	____	7.4.3.16. Understand the importance of diphtheria and whooping cough immunization
	____	____	7.4.3.17. Avoid breathing chemical vapors
	____	____	7.4.3.18. Never run an automobile in a closed garage

Level	Pre-Test	Post-Test	Body Systems
7	____	____	7.4.3.19. Never sit in a closed parked car with the engine running
	____	____	7.4.3.20. Never leave gas flames burning without adequate ventilation
	____	____	7.4.3.21. Know how to perform first-aid for victims of gas poisoning
	____	____	7.4.4.0. Demonstrate understanding of blood functions. Body Systems Test - 70% Accuracy
	____	____	7.4.4.1. Recognize the different functions of blood tissue
	____	____	7.4.4.2. Eat a balanced diet to avoid anemia
	____	____	7.4.4.3. Exercise to stimulate circulation of blood and lymph
	____	____	7.4.4.4. Drink plenty of liquids to maintain blood volume
	____	____	7.4.4.5. Avoid tight fitting garments which interfere with blood flow
	____	____	7.4.4.6. Do not pinch pimples or abscesses
	____	____	7.4.4.7. Consult a doctor when high fever of abscesses occur over a wide body area
	____	____	7.4.4.8. Allow a minor cut to bleed freely to cleanse the wound
	____	____	7.4.4.9. Use sterile gauze to apply pressure to a wound to halt bleeding

Level	Pre-Test	Post-Test	Body Systems
	____	____	7.4.4.10. Be familiar with body points at which pressure should be applied to stop bleeding
	____	____	7.4.4.11. Know when and how to apply a tourniquet
	____	____	7.4.4.12. Know their own blood types and Rh factors
	____	____	7.4.4.13. Avoid situations in which carbon dioxide may enter the blood
	____	____	7.4.4.14. Avoid snake and insect bites by wearing protective clothing
	____	____	7.4.4.15. Recognize poisonous snakes and insects and know first-aid measures for their bites
	____	____	7.4.4.16. Practice habits of cleanliness to avoid contact with fleas, lice and ticks
7	____	____	7.4.4.17. Know to eliminate breeding places of mosquitoes and other insects
	____	____	7.4.4.18. Obey safety rules on beaches
	____	____	7.4.5.0. Demonstrate understanding of the circulatory system
	____	____	7.4.5.1. Understand the function and operation of the circulatory system
	____	____	7.4.5.2. Eat a balanced diet for proper maintenance of the heart and blood vessels.

Level	Pre-Test	Post-Test	Body Systems
7	____	____	7.4.5.3. Avoid overeating and excesses of fats
	____	____	7.4.5.4. Obtain prompt medical assistance for any heart damaging disease
	____	____	7.4.5.5. Obtain sufficient sleep to allow the heart time to rest
	____	____	7.4.5.6. Have a complete physical exam before competing in sports
	____	____	7.4.5.7. Do not take part in sports until fully recovered from an illness
	____	____	7.4.5.8. Train thoroughly for any athletic competition
	____	____	7.4.5.9. Know how to administer first-aid for shock and fainting
	____	____	7.4.5.10. Maintain good posture for improved circulation
	____	____	7.4.5.11. Keep body surface areas covered during cold weather
	____	____	7.4.5.12. Learn to relax and vary daily activities to avoid emotional tension
	____	____	7.4.6.0. Demonstrate understanding that wastes and poisons are filtered from the blood. Body Systems Test -70% Accuracy
	____	____	7.4.6.1. Obtain prompt medical treatment for swollen lymph glands

Level	Pre-Test	Post-Test	Body Systems
7	____	____	7.4.6.2. Avoid eating, drinking or breathing toxic wastes
	____	____	7.4.6.3. Obtain plenty of exercise to stimulate liver circulation
	____	____	7.4.6.4. Insist on urinalysis as part of a general examination
	____	____	7.4.6.5. Obtain medical advice if urination is painful or difficult
	____	____	7.4.6.6. Avoid chilling, exhaustion, and contagious infections
	____	____	7.4.7.0. Demonstrate understanding of the body reactions to keep internal environment constant
	____	____	7.4.7.1. Explain environmental and emotional factors that affect body balances
	____	____	7.4.7.2. Choose clothing suitable to the environment to maintain temperature control
	____	____	7.4.7.3. Avoid prolonged exposure to sun and strenuous physical exercise
	____	____	7.4.7.4. Eat plenty of salt
	____	____	7.4.7.5. Obtain advice from the doctor in case of high or prolonged fever

Level 8

Growth and Development

Level	Pre-Test	Post-Test		Growth and Development
8	____	____	8.1.1.0	Demonstrate an understanding that growth and development depend on interaction of heredity and environment Growth and Development Test 70% Accuracy
	____	____	8.1.1.1	Understand that physical and mental potentialities are determined by heredity and environment.
	____	____	8.1.1.2	Accept one's own environmental and hereditary limitations.
	____	____	8.1.1.3	Understand that both parents make equal contributions to potentialities
	____	____	8.1.1.4	Maintain good health as a basis for producing health offspring
	____	____	8.1.1.5	Be aware of the significance of hereditary factors when choosing a marriage partner
	____	____	8.1.1.6	Recognize the importance of prenatal and postnatal medical care of expectant mothers
	____	____	8.1.1.7	Be familiar with advisory councils; genetic counselors
	____	____	8.1.1.8	Determine the validity of commonly held claims of heredity
	____	____	8.1.2.0	Demonstrate understanding that cultural heritage influences an individual's physical, mental, and social development. Growth and Development Test - 70% Accuracy
	____	____	8.1.2.1	Identify environmental factors that promote psychological and physical development

Level	Pre-Test	Post-Test	Growth and Development
8	_____	_____	8.1.2.2. Recognize the importance of biological and cultural environment in the development of the child before and after birth
	_____	_____	8.1.2.3. Explain why no two people grow up in exactly the same social environment
	_____	_____	8.1.2.4. Recognize the rapid physical and psychological changes during adolescence
	_____	_____	8.1.2.5. Examine principles of right and wrong
	_____	_____	8.1.2.6. Take advantage of educational opportunities for adult responsibilities
	_____	_____	8.1.2.7. Accept and respect the customs and beliefs of others
	_____	_____	8.1.2.8. Consider the rights and feelings of others in social relationships
	_____	_____	8.1.2.9. Be responsible for improving the physical and social environment
	_____	_____	8.1.3.0. Demonstrate knowledge that an individual's physical, mental, and social development is regulated by endocrine secretions. Growth and Development Test - 70% Accuracy
	_____	_____	8.1.3.1. Understand the role of major endocrine glands
	_____	_____	8.1.3.2. Understand that rate of growth is regulated by the endocrine system

Level	Pre-Test	Post-Test		Growth and Development
	____	____	8.1.3.3.	Know how to make adjustments to sexual development in adolescence
	____	____	8.1.3.4.	Recognize symptoms of glandular malfunctions
	____	____	8.1.3.5.	Eat sufficient iodine
	____	____	8.1.3.6.	Recognize symptoms of diabetes
	____	____	8.1.3.7.	Know common medical aid in case of insulin shock or other illness
				Social/Emotional Adjustment
8	____	____	8.2.1.0.	Demonstrate knowledge that personality is a product of heredity and environment. Social/Emotional Adjustment Test. 70% Accuracy
	____	____	8.2.1.1.	Identify the environmental and hereditary factors that influence personality development
	____	____	8.2.1.2.	Know how to alter one's personality traits
	____	____	8.2.1.3.	Know good grooming and health pratices
	____	____	8.2.1.4.	Avoid undue concern over adolescent body changes
	____	____	8.2.1.5.	Accept the socioeconomic position of one's own family

Level	Pre-Test	Post-Test		Social/Emotional Adjustment
	____	____	8.2.1.6	Learn how to take advantage of opportunities to improve personality development
	____	____	8.2.1.7	Identify short and long range future objectives
	____	____	8.2.1.8	Know how to accept family crises and changes with optimism.
	____	____	8.2.1.9	Recognize the desirable personal qualities of others
	____	____	8.2.1.10	Know how to develop one's talents and abilities
	____	____	8.2.1.11	Know how to form affectionate and wholesome friendships with peers
	____	____	8.2.1.12	Realize that parental advice and control are attempts of love
8	____	____	8.2.1.13	Know how to consider educational and vocational goals
	____	____	8.2.2.0	Demonstrate a knowledge that individuals develop patterns of behavior. Social/Emotional Adjustment Test - 70% Accuracy
	____	____	8.2.2.1	Understand the influence of childhood environment and social relationships on behavior patterns
	____	____	8.2.2.2	Develop better relationships by recognizing the influences which cause behavior
	____	____	8.2.2.3	Examine value systems of parents and society
	____	____	8.2.2.4	Examine motivation for behavior and establish goals
	____	____	8.2.2.5	Learn how to alter instinctive behavior constructively

Level	Pre-Test	Post-Test	Social/Emotional Adjustment
8	____	____	8.2.2.6. Learn to weigh desirability of participating in group behavior
	____	____	8.2.2.7. Recognize behavior defense mechanisms
	____	____	8.2.2.8. Learn the importance of facing up to inner conflicts and using thoughtful solutions
	____	____	8.2.3.0. Demonstrate knowledge of how one's capacity to learn is influenced by heredity and environment. Social/Emotional Adjustment Test - 70% Accuracy
	____	____	8.2.3.1. Relate capacity to learn to heredity, environment, motivation, physical health, and attitudes
	____	____	8.2.3.2. Choose goals which are realistic to one's capacity
	____	____	8.2.3.3. Define goals clearly to determine value and source of motivation
	____	____	8.2.3.4. Choose friends who create a positive influence toward goals
	____	____	8.2.3.5. Seek broad experiences and improve intellectual development and psychological maturity
	____	____	8.2.3.6. Develop effective techniques of study and concentration

Level	Pre-Test	Post-Test		Social/Emotional Adjustment
	____	____	8.2.3.7.	Use tests as devices to determine what still must be learned
	____	____	8.2.4.0.	Demonstrate understanding that one's individual emotional development is interrelated with physical, mental and social development. Social/Emotional Adjustment Test - 70% Accuracy
	____	____	8.2.4.1.	Express emotions appropriate for one's age
	____	____	8.2.4.2.	Recognize differences in accepted standards of emotional behavior in social groups
	____	____	8.2.4.3.	Recognize that others who show emotional extremes are in poor health
8	____	____	8.2.4.4.	Learn how to manage and reduce strong feelings of anger and fear
	____	____	8.2.4.5.	Analyze the causes of anxiety and how to eliminate them
	____	____	8.2.4.6.	Develop confidence
	____	____	8.2.4.7.	Develop emotional sensitivity to the valuable things in life and aspects of society that need improvement
	____	____	8.2.5.0.	Demonstrate knowledge that emotional conflict may result from several sources

Level	Pre-Test	Post-Test		Social/Emotional Adjustment
	____	____	8.2.5.1.	Learn to make decisions in case of emotional conflict
	____	____	8.2.5.2.	Accept parents as individuals
	____	____	8.2.5.3.	Establish a realistic self-concept
	____	____	8.2.5.4.	Plan an approach to dating with parents to provide maximum social development
	____	____	8.2.5.5.	Learn to converse easily with members of the opposite sex
	____	____	8.3.5.6.	Understand the advantages and disadvantages of "going steady"
	____	____	8.2.5.7.	Consider many different vocations and seek competent advice
8	____	____	8.2.6.0.	Demonstrate understanding of one's mental health. Social/Emotional Adjustment Test - 70% Accuracy
	____	____	8.2.6.1.	Learn to solve emotional conflicts quickly
	____	____	8.2.6.2.	Seek professional help if emotional conflicts persist
	____	____	8.2.6.3.	Develop a value system which will guide in solving conflicts
	____	____	8.2.6.4.	Recognize the symptoms of potential mental illness among family members and friends

Level	Pre-Test	Post-Test		Social/Emotional Adjustment
8	____	____	8.2.6.5.	Support education, legislation and community projects which promote good mental health
	____	____	8.2.6.6.	Assist people who have been emotionally disturbed to adjust to community life
	____	____	8.2.6.7.	Support research attempts to determine causes and prevention measures for emotional disturbance

TAXONOMY OF GOALS AND OBJECTIVES

HEALTH DOMAIN

Skilled Health Achievement

Level 4

Topic 1: Growth and Development

4.1.1.0 *Given a representative sample of test items, children will demonstrate their understanding of the cellular basis of body structure and how characteristics are inherited and acquired during the developmental process. Criterion: 70% accuracy on the Growth and Development Test - Level 4.

4.1.1.1 Children will identify cells as the basic parts of the body and all living things.

4.1.1.2. Children will describe cell structure.

4.1.1.3. Children will describe the growth process.

4.1.1.4. Children will explain how people inherit traits from their parents, using the terms chromosomes and genes.

4.1.1.5. Children will discriminate between inherited and learned characteristics.

4.1.1.6. Children will explain how the things people can do affect some of their traits.

4.1.2.0. *Given a representative sample of test items, children will demonstrate their understanding of the physiological basis for healthy body function during activity. Criterion: 70% accuracy on the Growth and Development Test - Level 4.

4.1.2.1. Children will describe the functions of bones, joints, and ligaments.

4.1.2.2. Children will describe the structure of a bone.

4.1.2.3. Children will explain how muscles move bones.

4.1.2.4. Children will describe the effects of exercise on muscles.

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*The first statement of each subsection contains the criterion for mastery and the evaluation instrument for the statements which follow.

4.1.2.5. Children will explain how the lungs and heart function and how they help move the body.

4.1.3.0. Given a representative sample of test items, children will demonstrate their understanding of how their senses tell them about their outer and inner environments. Criterion: 70% accuracy on the Growth and Development Test - Level 4.

4.1.3.1. Children will describe how most people use seeing and hearing to get information from the outside world.

4.1.3.2. Children will tell how taste and smell are related.

4.1.3.3. Children will describe how touch and the inner senses can supply information about the immediate state of the body.

4.1.4.0. Given a representative sample of test items, children will demonstrate their understanding of how people adjust and adapt to their environment. Criterion: 70% accuracy on the Growth and Development Test - Level 4.

4.1.4.1. Children will explain how the human body adjusts to temperature changes.

4.1.4.2. Children will explain physical adaptation: How traits that fit people to their environment are inherited.

4.1.4.3. Children will describe how ways of adapting can be learned.

Topic 2: Health and Safety

4.2.1.0. Given a representative sample of test items, children will demonstrate their understanding of how bacteria and viruses can cause communicable diseases. Criterion: 70% accuracy on the Health and Safety Test - Level 4.

4.2.1.1. Children will tell how bacteria are helpful.

4.2.1.2. Children will describe how bacteria and viruses cause infection and illness.

4.2.1.3. Children will explain the concept of communicable disease.

4.2.1.4. Children will identify methods of transmission of disease microbes.

4.2.2.0. Given a representative sample of test items, children will demonstrate their understanding of how they can guard against disease. Criterion: 70% accuaracy on the Health and Safety Test - Level 4.

4.2.2.1. Children will define resistance.

4.2.2.2. Children will tell how eating the right foods can help fight disease.

4.2.2.3. Children will describe other ways of keeping well: getting enough exercise and rest, wearing appropriate clothes.

4.2.2.4. Children will describe some ways of avoiding microbes: avoiding contaminated water and food, sick animals and people.

4.2.3.0. Given a representative sample of test items, children will demonstrate their understanding of how to prevent accidents and perform first aid when accidents do occur. Criterion: 70% accuracy on the Health and Safety Test - Level 4.

4.2.3.1. Children will identify causes of minor burns.

4.2.3.2. Children will explain preventive and remedial measures for minor burns.

4.2.3.3. Children will identify causes of small cuts and similar injuries.

4.2.3.4. Children will explain preventive and remedial measures for small cuts and similar injuries.

4.2.3.5. Children will identify causes of broken bones.

4.2.3.6. Children will explain preventive and remedial measures for broken bones.

4.2 4.0. Given a representative sample of test items, children will demonstrate their understanding of how to prevent accidents outside the home. Criterion: 70% accuracy on the Health and Safety Test - Level 4.

4.2.4.1. Children will identify causes for accidents in play activities and on holidays.

4.2.4.2. Children will explain preventive measures for accidents in play activities and on holidays.

4.2.4.3. Children will identify causes for water related accidents.

4.2.4.4. Children will explain preventive measures for water related accidents.

4.2.4.5. Children will identify causes for accidents that can occur while traveling.

4.2.4.6. Children will explain preventive measures for accidents that can occur while traveling.

Topic 3: Social/Emotional Adjustment

4.3.1.0. Given a representative sample of test items, children will demonstrate their understanding that personality is all the characteristic responses an individual makes to his environment. Criterion: 70% accuracy on the Social/Emotional Adjustment Test.

4.3.1.1. Children will identify appearance as one component of personality.

4.3.1.2. Children will explain that emotions and behavior are components of personality.

4.3.1.3. Children will define personality as all the ways an individual looks, acts, thinks, and feels.

4.3.2.0. Given a representative sample of test items, children will demonstrate their understanding that personality is influenced by heredity and environment. Criterion: 70% accuracy on the Social/Emotional Adjustment Test.

4.3.2.1. Children will recognize that heredity influences personality.

4.3.2.2. Children will offer additional evidence of the influence of heredity on personality.

4.3.2.3. Children will identify the environment as an influence on personality.

4.3.3.0. Given a representative sample of test items, children will demonstrate their understanding of how families, friends, and society influence the development of their personalities. Criterion: 70% accuracy on the Social/ Emotional Adjustment Test - Level 4.

4.3.3.1. Children will identify ways parents and siblings influence the personalities of individuals.

4.3.3.2. Children will identify ways peers and peer groups influence the personalities of individuals.

4.3.3.3. Children will identify ways the society influences the personalities of individuals.

4.3.4.0. Given a representative sample of test items, children will demonstrate their understanding of how they can take responsibility of their own social/emotional adjustment. Criterion: 70% accuracy on the Social/Emotional Adjustment Test - Level 4.

4.3.4.1. Children will identify ways individuals accept their physical differences.

4.3.4.2. Children will identify ways individuals work to overcome handicaps.

4.3.4.3. Children will identify ways they can measure their strengths.

Topic 4: Community Health and Safety

4.4.1.0. Given a representative sample of test items, children will demonstrate how they can contribute to the health and safety of their community by recognizing situations requiring professional assistance and by cooperating with professionals who work to keep the community safe and healthy. Criterion: 70% accuracy on the Community Health and Safety Test - Level 4.

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4.4.1.1. Children will identify neighborhood situations in which the help of professional community service specialists is needed.

4.4.1.2. Children will categorize neighborhood situations in which the help of professional community service specialists is needed.

4.4.1.3. Children will suggest ways in which professionals avert health and safety problems and thus maintain the safety and health of the people in the community.

4.4.1.4. Children will evaluate the behavior of community residents to see whether it helps or hinders professionals as they work.

4.4.2.0. Given a representative sample of test items, children will demonstrate how they can develop wise buying habits by being able to recognize products that will satisfy their needs. Criterion: 70% accuracy on the Community Health and Safety Test - Level 4.

4.4.2.1. Children will identify buying as a decision-making process requiring evaluation of real needs.

4.4.2.2. Children will list various forms of information available to consumers.

4.4.2.3. Children will evaluate advertising messages for factual information and exaggerated claims.

4.4.3.0. Given a representative sample of test items, children will demonstrate their understanding of how to prevent harm to the environment by recognizing the importance of their own behavior and by recognizing the importance of social organizations in maintaining the quality of the environment. Criterion: 70% accuracy on the Community Health and Safety Test - Level 4.

4.4.3.1. Children will form a simple definition of pollution.

4.4.3.2. Children will identify actions that cause pollution.

4.4.3.3. Children will identify ways in which community workers and recycling companies help keep the environment clean.

4.4.3.4. Children will discuss ways in which their own actions can contribute to the healthy state of their own environment.

4.4.4.0. Given a representative sample of test items, children will demonstrate the understanding of how they can prevent harm to themselves and others by recognizing the need to cooperate with rules, posted regulations, laws, and law enforcement officers. Criterion: 70% accuracy on the Community Health and Safety Test - Level 4.

4.4.4.1. Children will identify needs for rules that limit or prohibit behavior.

4.4.4.2. Children will discuss needs for rules that limit or prohibit behavior.

4.4.4.3. Children will suggest effective ways of making sure that people follow rules.

4.4.4.4. Children will evaluate the importance of good relations between enforcement personnel and members of the community.

Level 5

Topic 1: Body and Mind

5.1.1.0. Given a representative sample of test items, children will demonstrate their understanding of how their basic life systems work together. Criterion: 70% accuracy on the Body and Mind Test - Level 5.

5.1.1.1. Children will tell how oxygen is provided to the body and why it is important.

5.1.1.2. Children will tell how food is provided to body cells and some ways that the digestive system can affect feelings and actions.

5.1.1.3. Children will identify some waste products of the body (CO_2 and digestive wastes) and tell how the body systems work together to get rid of wastes.

5.1.2.0. Given a representative sample of test items, children will demonstrate their understanding of how the nervous system controls the actions of the body. Criterion: 70% accuracy on the Body and Mind Test - Level 5.

5.1.2.1. Children will tell how the brain controls body actions by means of the nerves.

5.1.2.2. Children will describe the functions of the voluntary and involuntary nervous systems.

5.1.2.3. Children will describe the functions of the sensory nerves and motor nerves.

5.1.3.0. Given a representative sample of test items, children will demonstrate their understanding of how their physical condition can affect their minds and emotions. Criterion: 70% accuracy on the Body and Mind Test - Level 5.

5.1.3.1. Children will tell what their general physical condition has to do with their thinking ability, mood, and responses to other people.

5.1.3.2. Children will describe the time clock that operates in the body and tell how it affects the way a person feels at different times of the day.

5.1.3.3. Children will describe the effects that exercise and eating can have on the mind and emotions.

5.1.4.0. Given a representative sample of test items, children will demonstrate their understanding of how the way they think and feel can affect their physical state. Criterion: 70% accuracy on the Body and Mind Test - Level 5.

5.1.4.1. Children will tell when their body is likely to produce adrenalin and what changes adrenalin makes in the way they might feel.

5.1.4.2. Children will describe the effects that worry, tension, and fatigue can have on the body.

5.1.4.3. Children will identify the kinds of life changes that often precede physical illness and become more aware of the connection between mind and body.

Topic 2: Stress and Strength

5.2.1.0. Given a representative sample of test items, children will demonstrate their awareness of different kinds of stress they experience and will respond positively to physical and emotional stress. Criterion: 70% accuracy on the Stress and Strength Test - Level 5.

5.2.1.1. Children will identify activities that cause physical stress.

5.2.1.2. Children will identify causes and effects of emotional stress.

5.2.1.3. Children will explain how some kinds of stress result in growth.

5.2.2.0. Given a representative sample of test items, children will demonstrate their awareness that a good diet can protect them against stress and their knowledge of how they can make their diet well-balanced and healthful. Criterion: 70% accuracy on the Stress and Strength Test - Level 5.

5.2.2.1. Children will identify the food groups and give examples of the foods in each group.

5.2.2.2. Children will identify the nutrients that the body requires for strength and health.

5.2.2.3. Children will describe the consequences of a poor diet and tell what is being done to help malnourished people.

5.2.3.0. Given a representative sample of test items, children will demonstrate their understanding of how microorganisms invade the body and cause disease and how vaccination protects against infection. Criterion: 70% accuracy on the Stress and Strength Test - Level 5.

5.2.3.1. Children will identify the ways in which microorganisms get into the body.

5.2.3.2. Children will describe the body's defenses against microorganisms — skin, white blood cells, and antibodies.

5.2.3.3. Children will explain how immunity occurs.

5.2.3.4. Children will explain how vaccination causes immunity.

5.2.4.0 Given a representative sample of test items, children will demonstrate their knowledge of ways to care for themselves when they are under the stress of illness. Criterion: 70% accuracy on the Stress and Strength Test - Level 5.

5.2.4.1. Children will explain why special care is important when they are ill.

5.2.4.2. Children will explain what some common, nonprescription medicines do and explain why these cannot be expected to cure illnesses.

5.2.4.3. Children will tell the importance of reading labels on medicines and identify possible side effects.

5.2.4.4. Children will tell how they know when to see a doctor.

Topic 3: Needs

5.3.1.0. Given a representative sample of test items, children will demonstrate their recognition that all people have needs. They will classify those needs as physical, social, and psychological. Criterion: 70% accuracy on the Needs Test - Level 5.

5.3.1.1. Children will identify physical needs and the need for safety.

5.3.1.2. Children will discuss the evidence that shows people have important needs that are not physical.

5.3.1.3. Children will describe some social and psychological needs.

5.3.2.0. Given a representative sample of test items, children will demonstrate their recognition that some needs must be satisfied before others can be and their ability to explain why this is so. Criterion: 70% accuracy on the Needs Test - Level 5.

5.3.2.1. Children will discuss Maslow's pyramid of needs, and explain why the needs on the bottom are taken care of before those on the top.

5.3.2.2. Children will discuss the need for loving and belonging.

5.3.2.3. Children will define self-esteem and tell why it is important.

5.3.3.0. Given a representative sample of test items, children will demonstrate their understanding of how needs can be the cause of feelings and actions and recognition that no two people feel and act quite the same way. Criterion: 70% accuracy on the Needs Test - Level 5.

5.3.3.1. Children will explain how feelings can result from needs and identify needs that may cause people to do things like lose their tempers or boast.

5.3.3.2. Children will describe some ways people may act in order to fill needs for belonging and friendship.

5.3.3.3. Children will recognize that because everyone has a different personality no two people will act and feel exactly the same way.

5.3.4.0. Given a representative sample of test items, children will demonstrate their realization that everyone has some unmet needs and their ability to deal with them constructively. Criterion: 70% accuracy on the Needs Test - Level 5.

5.3.4.1. Children will discuss ways to deal with unmet physical and social needs.

5.3.4.2. Children will discuss feelings people have as a result of success or failure and discuss ways of coping with failure.

5.3.4.3. Children will explain why people express their feelings in different ways in different situations and discuss the importance of showing feelings and choosing appropriate ways to show them.

Topic 4: Conservation and Safety

5.4.1.0. Given a representative sample of test items, children will demonstrate their appreciation of the role of technology as well as their role in making sure that food remains plentiful, fresh, and free from harmful substances. Criterion: 70% accuracy on the Conservation and Safety Test - Level 5.

5.4.1.1. Children will explain why large farms are necessary for modern food production and discuss the advantages and drawbacks of pesticides.

5.4.1.2. Children will tell how food can be kept from spoiling and identify some dangers of food preserving methods.

5.4.1.3. Children will explain what they can do to keep their food safe and healthful.

5.4.2.0. Given a representative sample of test items, children will demonstrate their recognition of the benefits of modern technology. They will also demonstrate their understanding of its negative aspects and ways to minimize them. Criterion: 70% accuracy on the Conservation and Safety Test - Level 5.

5.4.2.1. Children will identify features of the modern city which allow people to live healthier lives and discuss aspects of the modern city which can be harmful to people's health.

5.4.2.2. Children will identify health benefits which result from improved transportation and discuss hazardous aspects of modern automobile travel.

5.4.2.3. Children will recognize that petroleum and radioactivity are important sources of energy and be aware of the disadvantages of these energy sources and the search for alternatives.

5.4.3.0. Given a representative sample of test items, children will demonstrate their understanding that their health depends on wise use of resources by society. Criterion: 70% accuracy on the Conservation and Safety Test - Level 5.

5.4.3.1. Children will identify health benefits derived from the earth and recognize the need for controlled land use to ensure their health in the future.

5.4.3.2. Children will identify health benefits derived from fresh water and recognize the need for maintaining sources of clean water.

5.4.3.3. Children will identify health benefits derived from green plants and from wood products and recognize their health depends on preservation and wise use of growing things.

5.4.4.0. Given a representative sample of test items, children will demonstrate their understanding of the need to cooperate with groups seeking to help people live healthier lives. Criterion: 70% accuracy on the Conservation and Safety Test - Level 5.

5.4.4.1. Children will recognize the family as a group of people working together for health and identify ways in which members of a family can use and benefit from community health services.

5.4.4.2. Children will discuss how groups formulate suggestions, rules, and laws to prevent pollution.

5.4.4.3. Children will identify ways in which people work together to prevent waste and misuse of natural resources.

Level 6

Topic 1: Learning

6.1.1.0. Given a representative sample of test items, children will demonstrate their recognition of the relationship between stimulus and response and understanding of the difference between learned and automatic responses. Criterion: 70% accuracy on the Learning Test - Level 6.

6.1.1.1. Children will tell how some of their bodily functions are inborn and automatic.

6.1.1.2. Children define conditioning.

6.1.1.3. Children will identify ways they are conditioned to respond.

6.1.1.4. Children will explain how habits are formed and how they become automatic.

6.1.2.0. Given a representative sample of test items, children will demonstrate their recognition of several methods of learning and understanding of how those methods combine in the development of learning skills. Criterion: 70% accuracy on the Learning Test - Level 6.

6.1.2.1. Children will describe at least two ways of learning independently.

6.1.2.2. Children will contrast functions of the left and right hemispheres of the brain.

6.1.3.0. Given a representative sample of test items, children will demonstrate their comprehension of how habits are formed and changed. They will set goals and plan time to facilitate good habit formation. Criterion: 70% accuracy on the Learning Test - Level 6.

6.1.3.1. Children will describe how habits are formed and how they can be changed.

6.1.3.2. Children will identify the need to establish priorities and plan their time.

6.1.3.3. Children will apply their knowledge of forming habits and planning time to the development of good study habits.

6.1.4.0. Given a representative sample of test items, children will demonstrate their awareness that health care and character development will help them become healthy adults. They will also assess some of their personal preferences and aptitudes to help them formulate goals for the future. Criterion: 70% accuracy on the Learning Test - Level 6.

6.1.4.1. Children will give reasons why developing healthy habits is important to their physical growth.

6.1.4.2. Children explain the importance of making a decision to learn on their own and tell how independent decision-making helps build character.

6.1.4.3. Children will explain the importance of interests, aptitudes, attitudes, and values in setting and achieving goals.

Topic 2: Body Responses

6.2.1.0. Given a representative sample of test items, children will demonstrate their understanding of how their bodies grow and change, especially during adolescence. Criterion: 70% accuracy on the Body Responses Test - Level 6.

6.2.1.1. Children will tell why hormones are called chemical messengers.

6.2.1.2. Children will describe the function of the pituitary gland.

6.2.1.3. Children will explain that although individuals grow at their own pace, there is a general pattern of growth for girls and another pattern for boys.

6.2.1.4 Children will describe how the pituitary gland and gonads influence growth during puberty.

6.2.1.5. Children will compare and contrast physical development for boys and girls during adolescence.

6.2.2.0. Given a representative sample of test items, children will demonstrate their recognition of the relationship between proper eating habits and good health and will understand some physiological, psychological, and social factors that influence their eating habits. Criterion: 70% accuracy on the Body Responses Test - Level 6.

6.2.2.1. Children will explain that different people need different amounts of nutrients and that health can be affected if they get too much or too little of what they need.

6.2.2.2. Children will discriminate between internal and external motivations for eating.

6.2.2.3. Children will tell how time can act as a food cue.

6.2.2.4. Children will describe some ways that the people around them influence their eating habits.

6.2.3.0. Given a representative sample of test items, children will demonstrate their understanding of the relationships between exercise and health and will form habits that will help them stay physically fit. Criterion: 70% accuracy on the Body Responses Test - Level 6.

6.2.3.1. Children will explain how physical activity is necessary to burn off calories and to become physically fit.

6.2.3.2. Children will identify the relationship between exercise and the development of strength, suppleness, and stamina.

6.2.3.3. Children will tell how exercise can help them relieve tension.

6.2.3.4. Children will explain why different people need different amounts of exercise.

6.2.4.0. Given a representative sample of test items, children will demonstrate their understanding of the relationship between getting tired and staying healthy and recognition of certain theories and facts that explain why and how people sleep. Criterion: 70% accuracy on the Body Responses Test - Level 6.

6.2.4.1. Children will explain how fatigue helps the body stay healthy.

6.2.4.2. Children will describe a current scientific theory regarding the cause of sleep.

6.2.4.3. Children will identify some changes their bodies and minds go through during the first four stages of sleep.

6.2.4.4. Children will explain the significance of rapid eye movement (REM) during sleep and tell why dreaming is important.

6.2.5.0. Given a representative sample of test items, children will demonstrate their understanding of some ways that different drugs can make their bodies respond and their realization that such changes can be dangerous. Criterion: 70% accuracy on the Body Responses Test - Level 6.

6.2.5.1. Children will define the terms drug, habit, tolerance, and addiction and explain how such changes can be dangerous.

6.2.5.2. Children will identify some ways alcohol and barbiturates can change their bodies and explain how such changes can be dangerous.

6.2.5.3. Children will identify some ways caffeine and amphetamines can affect their bodies and explain how such changes can be dangerous.

6.2.5.4. Children will describe how the body responds to cigarettes, marijuana, and LSD and tell how such responses can be dangerous.

6.2.6.0. Given a representative sample of test items, children will demonstrate their understanding of how the environment, the disease agent, and the host work together to promote infectious and noninfectious diseases and how certain habits will help them resist diseases. Criterion: 70% accuracu on the Body Responses Test - Level 6.

6.2.6.1. Children will discriminate between infectious and noninfectious disease.

6.2.6.2. Children will describe three things that happen before someone catches an infectious disease, such as the common cold.

6.2.6.3. Children will describe three factors that can lead to noninfectious disease, such as coronary heart disease.

Topic 3: Social/Emotional Adjustment

6.3.1.0. Given a representative sample of test items, children will demonstrate their recognition that satisfaction is inherent in their growing mastery of resources and their grasp of perceptive self-appraisal and realistic risk-taking. Criterion: 70% accuracy on the Social/Emotional Adjustment Test - Level 6.

6.3.1.1. Children will explain that extrinsic rewards for doing something are often not as powerful as the reward intrinsic to doing it well.

6.3.1.2. Children will describe how mastering the tools and resources around them is a sign of growth.

6.3.1.3. Children will tell that appropriate choices are based on self-evaluation and sensible risk-taking.

6.3.2.0. Given a representative sample of test items, children will demonstrate their understanding that competition can motivate them to achieve and that cooperation can enable them to reach goals and derive a sense of accomplishment. Criterion: 70% accuracy on the Social/Emotional Adjustment Test - Level 6.

6.3.2.1. Children will describe how competition can assist in increasing achievement and stretching abilities.

6.3.2.2. Children will identify ways that personal gains may often be increased through cooperation with others who have similar goals.

6.3.2.3. Children will tell how groups with cooperative members often can achieve more than the individuals can by working separately.

6.3.3.0. Given a representative sample of test items, children will demonstrate their recognition that working with others involves a reciprocal relationship in which they influence groups and groups influence them. Criterion: 70% accuracy on the Social/Emotional Adjustment Test - Level 6.

6.3.3.1. Children will describe how leadership in a group is determined by the structure and goals of the group and the situation in which it comes together.

6.3.3.2. Children will explain the importance of followers in choosing and shaping a leader to meet the group needs.

6.3.3.3. Children will identify the strength of group pressure and the importance of knowing when to act independently.

6.3.4.0. Given a representative sample of test items, children will demonstrate their recognition of the importance of developing inner strengths such as self-confidence, independent values, and the ability to project long range goals. Criterion: 70% accuracy on the Social/Emotional Adjustment Test - Level 6.

6.3.4.1. Children will probe into the idea that their identities are based on what they think of themselves and on what others think of them.

6.3.4.2. Children will explain that one's values derive successively from parents, peers, and one's independent perception of reality.

6.3.4.3. Children will explain that human growth involves the ability to delay gratification in pursuit of long range goals.

Topic 4: Health

6.4.1.0. Given a representative sample of test items, children will make wise choices about the health care services they wish to have available to them. Criterion: 70% accuracy on the Health Test - Level 6.

6.4.1.1. Children will identify ways people can get health care in a United States community. They will compare and contrast the features of these services.

6.4.1.2. Children will identify ways health care services are provided in a developing nation.

6.4.1.3. Children will compare and contrast the health care services in a developing nation with those in the United States.

6.4.1.4. Children will tell how health care services are provided in a country with national health insurance. They will compare and contrast these services with those in their own country.

6.4.2.0. Given a representative sample of test items, children will demonstrate their awareness of the effects of social change on their lives and their society. They will demonstrate their knowledge of how they may adjust and adapt to changes that promote health and well-being. Criterion: 70% accuracy on the Health Test - Level 6.

6.4.2.1. Children will relate how society changes and what causes the changes.

6.4.2.2. Children will describe how changes affect their lives.

6.4.2.3. Children will explain how they can adjust and adapt to change and who can help.

6.4.3.0. Given a representative sample of test items, children will demonstrate the understanding that the best use of technology in the future depends on wise decisions made in the present. Criterion: 70% accuracy on the Health Test-Level 6.

6.4.3.1. Children will describe some new health services and explain how our knowledge and technology helped make these services possible.

6.4.3.2. Children will explain how technology can be used to improve the environment rather than harm it.

6.4.3.3. Children will recognize that technological advances change the world in many ways and realize that technology will only benefit people if they use it well.

Level 7

Topic 1: Health

7.1.1.0. Given a representative sample of test items, children will demonstrate their understanding that health is the result of the interaction between social, mental, and physical factors. Criterion: 70% accuracy on the Health Test - Level 7.

7.1.1.1. Children will identify example of the interaction of physical, mental-emotional, and social health factors.

7.1.1.2. Children will closely examine popular beliefs about health to determine their validity.

7.1.1.3. Children will be willing to accept a share of social responsibility for the health of the entire community.

7.1.2.0. Given a representative sample of test items, children will demonstrate their knowledge that the body is organized into specialized parts that interact in maintaining healthy functioning. Criterion: 70% on the Health Test - Level 7.

7.1.2.1. Children will learn the names of body systems, their functions, and the health practices necessary to their proper functioning.

7.1.2.2. Children will recognize the benefits to health which result from improved habits of sleeping, eating, exercise, and emotional expression.

Topic 2: Daily Needs

7.2.1.0. Given a representative sample of test items, children will demonstrate their understanding that individuals are interdependent with their environment, from which they obtain the nutrients needed to maintain health. Criterion: 70% accuracy on the Daily Needs Test - Level 7.

7.2.1.1. Children will become acquainted with the nutrients needed for good health.

7.2.1.2. Children will classify foods according to whether they supply energy, growth and repair, or provide for regulation of cell activity.

7.2.1.3. Children will become acquainted with the large variety of foods available locally and the nutrients they supply.

7.2.1.4. Children will consider a variety of foods necessary to supply the essential nutrients when planning menus.

7.2.1.5. Children will realize that poor eating habits can result in poor health, lack of energy, and poor appearance.

7.2.1.6. Children will use a knowledge of nutrition to improve present eating habits.

7.2.1.7. Children will be aware of family and other environmental influences on dietary habits.

7.2.2.0. Given a representative sample of test items, children will demonstrate their knowledge that, to maintain health, food patterns must provide a chemical balance of nutrients. Criterion: 70% accuracy on the Dietary Needs Test - Level 7.

7.2.2.1. Children will plan and select a balanced daily diet using the four essential food groups.

7.2.2.2. Children will adjust the daily schedule to allow time for an ample breakfast which should include about ½ of the day's protein requirements.

7.2.2.3. Children will attempt to overcome dislikes that are based on emotion.

7.2.2.4. Children will recognize the social and emotional causes and the dangers of overweight and underweight.

7.2.2.5. Children will know the proper weight for their own body builds and eat amounts of nutritious foods which will maintain this weight.

7.2.2.6. Children will choose between-meal snacks which provide essential nutrients and which will not exceed their daily calorie needs.

7.2.2.7. Children will recognize food fads and quack diets and avoid being influenced by them.

7.2.3.0. Given a representative sample of test items, children will demonstrate their understanding that, to maintain a healthy structure and functioning, the individual is dependent on a healthful environment. Criterion: 70% accuracy on the Daily Needs Test - Level 7.

7.2.3.1. Children will discriminate changes in the environment caused by people's activities.

7.2.3.2. Children will relate these changes to their daily health needs.

7.2.3.3. Children will be aware of the vital importance of safe food, clean water, and clean air for good health.

7.2.3.4. Children will conserve our fresh water supply.

7.2.3.5. Children will accept responsibility for disposing of potential air and water pollutants.

7.2.3.6. Children will support antipollution legislation.

7.2.3.7. Children will educate other members of the community concerning the dangers of air and water pollution.

7.2.3.8. Children will support scientific research which is intended to improve the safety of food, water, and air.

Topic 3: Fitness

7.3.1.0. Given a representative sample of test items, children will demonstrate their knowledge that physical fitness, which contributes to total fitness, is maintained by regular physical exercise. Criterion: 70% accuracy on the Fitness Test - Level 7.

7.3.1.1. Children will recognize the value of physical activity in keeping physically fit, and the importance of physical fitness in overall fitness.

7.3.1.2. Children will develop improved strength, endurance, agility, grace, and poise.

7.3.1.3. Children will include some physical activities in each day's schedule.

7.3.1.4. Children will participate in physical recreation with others for relaxation and enjoyment.

7.3.1.5. Children will choose an enjoyable sport and work to improve their skills in the activity.

7.3.2.0. Given a representative sample of test items, children will demonstrate their understanding that fitness depends upon maintaining the health of the skeletal system. Criterion: 70% accuracy on the Fitness Test - Level 7.

7.3.2.1. Children will understand that bone is a living part of the body and that diseases of the bone and fractures need prompt medical attention.

7.3.2.2. Children will include sufficient calcium, phosphorus, and Vitamin D in their diets for building a healthy skeletal system.

7.3.2.3. Children will include exercise and rest in the daily routine for healthy bone growth.

7.3.2.4. Children will develop and maintain good posture while standing, walking, and sitting.

7.3.2.5. Children will recognize that skeletal growth may call for posture adjustments to maintain good body balance.

7.3.2.6. Children will choose shoes and socks which fit properly.

7.3.3.0. Given a representative sample of test items, children will demonstrate their understanding that vital body functions depend on the actions of the muscles. Criterion: 70% accuracy on the Fitness Test - Level 7.

7.3.3.1. Children will accept their body builds and select clothing which is complementary.

7.3.3.2. Children will get the proper amount of exercise to develop a strong body and good muscle tone.

7.3.3.3. Children will develop good posture to avoid strain on muscles.

7.3.3.4. Children will recognize signs of muscle fatigue and provide time for rest and recovery.

7.3.3.5. Children will use muscles efficiently when performing tasks.

7.3.3.6. Children will work and play carefully to avoid muscle injuries.

7.3.3.7. Children will obtain medical advice in the event of any major injury to muscles, tendons, or ligaments.

7.3.3.8. Children will obtain sufficient sleep to overcome normal fatigue.

7.3.3.9. Children will allow time for relaxation of mind and body.

7.3.4.0. Given a representative sample of test items, children will demonstrate their awareness that maintaining their appearance contributes to physical, mental, and social fitness. Criterion: 70% accuracy on the Fitness Test - Level 7.

7.3.4.1. Children will accept their physical features and concentrate on improving those aspects of appearance related to cleanliness and grooming.

7.3.4.2. Children will construct a checklist for improving their daily grooming practices.

7.3.4.3. Children will identify the health behavior (balancing the diet, getting sufficient sleep and adequate exercise) essential to having healthy skin, hair, and nails.

7.3.4.4. Children will recognize the important functions of skin and keep it clean.

7.3.4.5. Children will use cosmetics with discretion.

7.3.4.6. Children will sunbathe for sensible periods of time.

7.3.4.7. Children will recognize common skin problems and take measures to prevent infection.

7.3.4.8. Children will not attempt self treatment of serious skin problems, but consult a physician.

7.3.4.9. Children will keep the fingernails and toenails clean and trim.

7.3.4.10. Children will understand the structure and function of teeth and the causes of dental caries.

7.3.4.11. Children will reduce their consumption of sweets and brush their teeth thoroughly after meals.

7.3.4.12. Children will visit a dentist regularly for examination and care of the teeth.

7.3.4.13. Children will wear correctly fitted shoes and consider comfort before style.

7.3.5.0. Given a represetative sample of test items, children will demonstrate their understanding that participation in sports contributes to physical, mental, and social fitness. Criterion: 70% accuracy on the Fitness Test - Level 7.

7.3.5.1. Children will appreciate the values of a wide variety of sports.

7.3.5.2. Children will learn to play and work well with others.

7.3.5.3. Children will develop sufficient skills in sports to make participation satisfying.

7.3.5.4. Children will accept victory and defeat in a sportsmanlike manner.

7.3.5.5. Children will recognize safety rules for sports as important and desirable, and abide by them.

7.3.5.6. Children will be responsible for their own safety and that of fellow participants.

7.3.5.7. Children will respect the water as a facility for recreation and also as a potential hazard.

7.3.5.8. Children will be capable of good judgment in a water rescue attempt.

7.3.5.9. Children will be capable of giving artificial resuscitation in an approved manner.

7.3.6.0. Given a representative sample of test items, children will demonstrate their understanding that the efficient functioning of sense organs improves their interaction with the environment. Criterion: 70% accuracy on the Fitness Test - Level 7.

7.3.6.1. Children will understand the basic anatomy and function of the eye and ear.

7.3.6.2. Children will protect residual eyesight by habits of cleanliness, by using caution when handling sharp objects or tools, and by including sufficient amounts of vitamin A in the diet.

7.3.6.3. Children will avoid eye strain by using adequate lighting without glare when reading or writing and by giving eyes sufficient rest.

7.3.6.4. Children will know the types of services provided by various eye specialists and have regular eye examinations by a competent physician.

7.3.6.5. Children will recognize signs of eye trouble and seek medical assistance if they occur.

7.3.6.6. Children will avoid ear infections and damage by keeping foreign objects out of the ear, avoiding loud and shrill sounds, and refraining from swimming in unclean water.

7.3.6.7. Children will seek medical assistance for ear infections or apparent loss of hearing.

7.3.6.8. Children will recognize pain as a symptom of disease or body deficiency which needs correction.

7.3.6.9. Children will use all of their intact sense organs in communicating with others, and in adapting to the environment.

7.3.7.0. Given a representative sample of test items, children will demonstrate their knowledge that the individual senses interpret and respond to the environment through the coordinating activity of the nervous system. Criterion: 70% accuracy on the Fitness Test - Level 7.

7.3.7.1. Children will understand the function of the nervous system in maintaining good health and in adapting the body to the environment.

7.3.7.2. Children will guard against injury to the nervous system.

7.3.7.3. Children will seek prompt medical assistance for any symptoms which might indicate disease of the nervous system.

7.3.7.4. Children will obtain immunizations which are available to prevent diseases.

7.3.7.5. Children will develop emotional habits which allow relaxation of the nervous system.

7.3.7.6. Children will adjust to stress in the environment by accepting with minimum worry, factors which cannot be changed and by using their reasoning to find satisfactory solutions to those situations which can be controlled.

7.3.7.7. Children will avoid the use of chemical stimulants in combating fatigue.

7.3.7.8. Children will recognize fatigue as an indication of the body's need for rest and obtain regular amounts of sleep and relaxation.

Topic 4: Body Systems

7.4.1.0. Given a representative sample of test items, children will demonstrate their understanding that health is based on the activities of the cells, the structural and functional units of the body. Criterion: 70% accuracy on the Body Systems Test - Level 7.

7.4.1.1. Children will recognize that all cells require energy as they grow, divide, repair themselves, and carry out their special functions.

7.4.1.2. Children will maintain living habits by which the cells can obtain the food and oxygen required for metabolism.

7.4.1.3. Children will understand that hereditary characteristics are determined by the chromosomes in the cell nucleus.

7.4.1.4. Children will explain why even a single cell from a body is unique.

7.4.2.0. Given a representative sample of test items, children will demonstrate their knowledge that the digestive system converts food into substances the cells can use for energy and growth. Criterion: 70% accuracy on the Body Systems Test - Level 7.

7.4.2.1. Children will understand the functioning of the digestive system.

7.4.2.2. Children will avoid foods which can give indigestion.

7.4.2.3. Children will drink plenty of water between meals and at mealtime, but be careful to chew food carefully.

7.4.2.4. Children will not overload the digestive system with too much food.

7.4.2.5. Children will eat sufficient roughage to stimulate peristalsis and regular elimination of wastes.

7.4.2.6. Children will cook all starches thoroughly, eat only cooked eggs and fish, and avoid excessive fats in the diet.

7.4.2.7. Children will wash all vegetables and fruits before eating.

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7.4.2.8. Children will cook vegetables and fruits briefly in tightly covered containers to preserve vitamin values.

7.4.2.9. Children will relax before, during, and after meals to allow digestion to proceed normally.

7.4.2.10. Children will wash their hands after using the bathroom.

7.4.2.11. Children will establish a regular, relaxed time for elimination of solid wastes from the body.

7.4.2.12. Children will avoid the use of laxatives except as prescribed by a doctor.

7.4.2.13. Children will consult a doctor about persistent diarrhea, persistent pain in the abdomen, persistent vomiting, or bleeding hemorrhoids.

7.4.2.14. Children will recognize symptoms of appendicitis.

7.4.2.15. Children will avoid eating when emotionally upset.

7.4.2.16. Children will avoid alcohol, tobacco and drugs not prescribed by a doctor.

7.4.2.17. Children will avoid poisons, read all labels carefully, and be familiar with first-aid treatment for common types of poison.

7.4.3.0. Given a representative sample of test items, children will demonstrate their understanding that, through the respiratory system, vital gases are exchanged with the environment. Criterion: 70% accuracy on the Body Systems Test - Level 7.

7.4.3.1. Children will obtain plenty of fresh air and exercise.

7.4.3.2. Children will develop a habit of breathing through the nose, using the mouth for breathing only in emergencies.

7.4.3.3. Children will avoid laughing or talking excitedly while eating.

7.4.3.4. Children will cover nose and mouth with a cloth filter when doing extremely dusty or dirty work.

7.4.3.5. Children will know how to give first-aid for an object lodged in the respiratory system.

7.4.3.6. Children will see a doctor for persistent sore throat, fever, and colds or coughs.

7.4.3.7. Children will not use cold or cough remedies without a doctor's advice.

7.4.3.8. Children will wear clothing which does not restrict the breathing apparatus.

7.4.3.9. Children will avoid emotional upsets which may interfere with respiration.

7.4.3.10. Children will avoid smoking.

7.4.3.11. Children will provide sufficient moisture in the house during months when artificial heating dries out the air.

7.4.3.12. Children will accept responsibility as a member of society to reduce air pollution.

7.4.3.13. Children will avoid contact with people who have colds and confinement in crowded places.

7.4.3.14. Children will cover the nose and mouth when sneezing or coughing to avoid the spread of germs.

7.4.3.15. Children will have a yearly tuberculin test.

7.4.3.16 Children will understand the importance of immunization against diptheria and whooping cough.

7.4.3.17. Children will avoid breathing the vapors of chemicals which might be harmful.

7.4.3.18. Children will never run an automobile in a closed garage.

7.4.3.19. Children will never sit in a closed parked car with the engine running.

7.4.3.20. Children will never leave gas flames burning without adequate ventilation.

7.4.3.21. Children will know how to perform first-aid for victims of gas poisoning.

7.4.4.0. Given a representative sample of test items, children will demonstrate their understanding that the blood, composed of specialized cells and fluids, has transporting and protective functions in maintaining health. Criterion: 70% accuracy on the Body Systems Test - Level 7.

7.4.4.1. Children will recognize the different functions of blood tissue, and discriminate the part of the blood that carries out each function.

7.4.4.2. Children will eat a balanced diet to avoid anemia.

7.4.4.3. Children will exercise to stimulate circulation of blood and lymph.

7.4.4.4. Children will drink plenty of liquids to maintain blood volume.

7.4.4.5. Children will avoid tight fitting garments which interfere with blood flow.

7.4.4.6. Children will not pinch pimples or abscesses.

7.4.4.7. Children will consult a doctor when high fever or abscesses occur over a wide body area.

7.4.4.8. Children will allow a minor cut to bleed freely to cleanse the wound.

7.4.4.9. Children will use sterile gauze to apply pressure to a wound to halt bleeding.

7.4.4.10. Children will be familiar with the body points at which pressure should be applied to stop severe bleeding.

7.4.4.11. Children will know when and how to apply a tourniquet.

7.4.4.12. Children will know their own blood types and Rh factors.

7.4.4.13. Children will avoid situations in which carbon dioxide may enter the blood.

7.4.4.14. Children will avoid snake and insect bites by wearing protective clothing.

7.4.4.15. Children will recognize poisonous snakes and insects and know first-aid measures for their bites.

7.4.4.16. Children will practice habits of cleanliness to avoid contact with fleas, lice, and ticks which may carry disease germs.

7.4.4.17. Children will know to eliminate breeding places of mosquitoes and other insects around the community.

7.4.4.18. Children will obey safety rules on beaches where ocean life is a common hazard.

7.4.5.0. Given a representative sample of test items, children will demonstrate their understanding that the circulatory system transports the blood, with dissolved substances, throughout the body. Criterion: 70% accuracy on the Body Systems Test - Level 7.

7.4.5.1. Children will understand the function and operation of the circulatory system.

7.4.5.2. Children will eat a balanced diet for proper maintenance of the heart and blood vessels.

7.4.5.3. Children will avoid overeating and excesses of fats in the diet which may lead to fatty deposits in arteries.

7.4.5.4. Children will obtain prompt medical assistance for any disease which may cause eventual damage to heart valves.

7.4.5.5. Children will obtain sufficient sleep to allow the heart time to rest.

7.4.5.6. Children will have a complete physical examination before competing in strenuous sports activities.

7.4.5.7. Children will not take part in strenuous activities until fully recovered from an illness.

7.4.5.8. Children will train thoroughly for any athletic competition.

7.4.5.9. Children will know how to administer first-aid for shock and fainting.

7.4.5.10. Children will maintain good posture for improved circulation.

7.4.5.11. Children will keep surface areas of the body such as nose, ears, and feet covered in very cold weather.

7.4.5.12. Children will learn to relax and vary daily activities to avoid emotional tension.

7.4.6.0 Given a representative sample of test items, children will demonstrate their understanding that wastes and poisons are filtered from the blood and other body fluids by specialized organs. Criterion: 70% accuracy on the Body Systems Test - Level 7.

7.4.6.1. Children will obtain prompt medical treatment for swollen lymph glands including infected tonsils or adenoids.

7.4.6.2. Children will avoid eating, drinking, or breathing toxic substances which may damage the liver and kidneys.

7.4.6.3. Children will obtain plenty of exercise to stimulate circulation through the liver.

7.4.6.4. Children will insist on urinalysis as part of a general physical examination.

7.4.6.5. Children will obtain medical advice if urination is painful or difficult or if the color of the urine seems irregular.

7.4.6.6. Children will avoid chilling, exhaustion, and contagious infections which may cause kidney damage.

7.4.7.0. Given a representative sample of test items, children will demonstrate their understanding that the body reacts to keep its internal environment relatively constant despite wide fluctuations in the external environment. Criterion: 70% accuracy on the Body Systems Test - Level 7.

7.4.7.1. Children will explain environment and emotional factors that affect body balances.

7.4.7.2. Children will choose clothing suited to the environment which will help the body maintain temperature control.

7.4.7.3. Children will avoid prolonged exposure to the sun and strenuous physical exercise at high temperatures.

7.4.7.4. Children will eat plenty of salt, especially in hot weather.

7.4.7.5. Children will obtain advice from the doctor in case of high or prolonged fever.

Level 8

Topic 1: Growth and Development

8.1.1.0. Given a representative sample of test items, children will demonstrate their understanding that an individual's growth and development depend on the interaction of heredity and environment. Criterion: 70% accuracy on the Growth and Development Test - Level 8.

8.1.1.1. Children will understand that physical and mental potentialities are determined by both heredity and environment.

8.1.1.2. Children will accept their own environmental and hereditary limitations without undue emotional concern.

8.1.1.3. Children will understand that both parents make equal contributions to the potentialities of their children.

8.1.1.4. Children will maintain good health as a basis for producing physically and mentally healthy offspring.

8.1.1.5. Children will be aware of the significance of hereditary factors in choosing a marriage partner.

8.1.1.6. Children will recognize the importance of prenatal and postnatal medical care of expectant mothers.

8.1.1.7. Children will be familiar with advisory councils and the worth of advisory services provided by genetic counselors.

8.1.1.8. Children will determine the validity of some of the commonly held claims concerning heredity.

8.1.2.0. Given a representative sample of test items, children will demonstrate their understanding that cultural heritage influences an individual's physical, mental, and social development. Criterion: 70% accuracy on the Growth and Development Test - Level 8.

8.1.2.1. Children will identify the environmental factors that promote psychological and physical development.

8.1.2.2. Children will recognize the importance of the biological and cultural environment in the development of a child before and after birth.

8.1.2.3. Children will explain why no two people grow up in exactly the same social environment.

8.1.2.4. Children will recognize the rapid physical and psychological changes which occur during adolescence.

8.1.2.5. Children will examine their own principles of right and wrong and determine if they are based on sound judgment.

8.1.2.6. Children will take advantage of educational opportunities to prepare for future adult responsibilities.

8.1.2.7. Children will accept and respect the customs and beliefs of others without prejudice.

8.1.2.8. Children will consider the rights and feelings of others in social relationships.

8.1.2.9. Children will be responsible for improving the physical and social environment of all people.

8.1.3.0. Given a representative sample of test items, children will demonstrate the knowledge that an individual's physical, mental, and social development is regulated by endocrine secretions. Criterion: 70% accuracy on the Growth and Development Test - Level 8.

8.1.3.1. Children will understand the role of major endocrine glands and their effect on adolescent development.

8.1.3.2. Children will understand that the rate of growth and subsequent adult size are regulated by the endocrine system.

8.1.3.3. Children will know how to make adjustments to sexual development in adolescence.

8.1.3.4. Children will recognize symptoms of major glandular malfunctions.

8.1.3.5. Children will eat sufficient iodine.

8.1.3.6. Children will recognize symptoms of diabetes mellitus, its possible hereditary base, its effects, and the importance of early detection and treatment.

8.1.3.7. Children will know to summon medical aid in case of symptoms of insulin shock or other illness in a diabetic person.

Topic 2: Social/Emotional Adjustment

8.2.1.0. Given a representative sample of test items, children demonstrate their knowledge that personality, expressed by the sum of behavior, is the product of heredity and environment. Criterion: 70% accuracy on the Social/Emotional Adjustment Test - Level 8.

8.2.1.1. Children will identify the environmental and hereditary factors that influence the development of one's personality.

8.2.1.2. Children will know how to alter personality traits that cause anxiety, feelings of inadequacy, and poor relations with others.

8.2.1.3. Children will know good grooming and health practices which develop physical attractiveness.

8.2.1.4. Children will avoid undue concern over adolescent body changes which cause a temporary unattractive appearance.

8.2.1.5. Children will accept the socioeconomic position of one's own family without pride or shame.

8.2.1.6. Children will learn how to take advantage of opportunities which will improve their personality development, and how to avoid situations which may create personality problems.

8.2.1.7. Children will identify short and long range objectives which will affect their futures.

8.2.1.8. Children will know how to accept with optimism and understanding family crises and changes such as death, divorce, and remarriage.

8.2.1.9. Children will recognize the desirable personal qualities of others.

8.2.1.10. Children will know how to develop their own talents and abilities as a healthy means of gaining recognition.

8.2.1.11. Children will know how to form affectionate, wholesome friendships with people their own age.

8.2.1.12. Children will realize that parental advice and control are attempts by them to indicate love.

8.2.1.13. Children will know how to consider educational and vocational goals and seek assistance from advisors in the area.

8.2.2.0. Given a representative sample of test items, children will demonstrate a knowledge that individuals develop patterns of behavior which allow them to interact with their environment. Criterion: 70% accuracy on the Social/Emotional Adjustment Test - Level 8.

8.2.2.1. Children will understand the influence of childhood environment and social relationships on behavior patterns.

8.2.2.2. Children will learn how to develop better relationships by recognizing the influences which cause their behavior.

8.2.2.3. Children will examine the value systems of parents and society in relation to their own desires and establish life goals and values.

8.2.2.4. Children will examine motivation for their own behavior in terms of established goals and values.

8.2.2.5. Children will learn how to alter instinctive behavior according to learned ideas and planned goals.

8.2.2.6. Children will learn to weigh the desirability of participation in group behavior in terms of one's own goals and values.

8.2.2.7. Children will recognize behavior defense mechanisms and avoid relying on them.

8.2.2.8. Children will learn the importance of facing up to inner conflicts and using thoughtful solutions and healthy methods of adapting behavior.

8.2.3.0. Given a representative sample of test items, children will demonstrate their knowledge of how an individual's capacity to learn is influenced by heredity and environment. Criterion: 70% accuracy on the Social/Emotional Adjustment Test - Level 8.

8.2.3.1. Children will relate capacity to learn to heredity, environment, motivation, physical health, and attitudes.

8.2.3.2. Children will choose goals which are realistic in terms of one's own capacity.

8.2.3.3. Children will define goals clearly to determine their value and sources of motivation.

8.2.3.4. Children will choose friends who will create a positive influence toward their goals.

8.2.3.5. Children will seek broad experiences and improve intellectual development and psychological maturity.

8.2.3.6. Children will develop effective techniques of study and concentration.

8.2.3.7. Children will use tests as devices to determine what still must be learned.

8.2.4.0. Given a representative sample of test items, children will demonstrate their understanding that an individual's emotional development is interrelated with physical, mental, and social development. Criterion: 70% accuracy on the Social/Emotional Adjustment Test - Level 8.

8.2.4.1. Children will express emotions in forms that are appropriate for their age level.

8.2.4.2. Children will recognize differences in accepted standards of emotional behavior in different social groups and environments and understand the problems of other individuals in adjusting to standards.

8.2.4.3. Children will recognize that others who show emotional extremes may be in poor health or that other factors may make it difficult for them to exercise control over emotional reactions.

8.2.4.4. Children will learn how to manage and reduce strong feelings of anger and fear.

8.2.4.5. Children will analyze the causes of anxiety and learn how to eliminate them.

8.2.4.6. Children will develop confidence in themselves as worthy, desirable individuals with unique skills and abilities.

8.2.4.7. Children will develop emotional sensitivity to the valuable things in life and the aspects of society that need improvement.

8.2.5.0. Given a representative sample of test items, children will demonstrate knowledge that emotional conflict may result from contradictory expectations, goals, and needs. Criterion: 70% accuracy on the Social/Emotional Adjustment Test - Level 8.

8.2.5.1. Children will learn to make decisions in cases of emotional conflict after careful weighing of choices and listening to parental advice.

8.2.5.2. Children will accept parents as individuals and attempt to understand their viewpoint and motivation.

8.2.5.3. Children will establish a realistic self concept, including recognition of uniqueness and sexual identity.

8.2.5.4. Children will plan an approach to dating with parents which will provide maximum social development and relationships with other people.

8.2.5.5. Children will learn to converse easily with members of the opposite sex.

8.2.5.6. Children will understand the advantages and disadvantages of "going steady".

8.2.5.7. Children will consider many different vocations and seek competent advice concerning their financial and emotional rewards and the necessary abilities needed to succeed in such vocations.

8.2.6.0. Given a representative sample of test items, children will demonstrate their understanding that mental health depends on successful adaptations to emotional conflicts.

Criterion: 70% accuracy on the Social/Emotional Adjustment Test - Level 8.

8.2.6.1. Children will learn to solve emotional conflicts as quickly as possible.

8.2.6.2. Children will seek professional help if emotional conflicts persist.

8.2.6.3. Children will develop a value system which will act as a guide in solving conflicts.

8.2.6.4. Children will recognize the symptoms of potential mental illness among family members and friends and encourage them to seek help.

8.2.6.5. Children will support education, legislation, and community projects which promote good mental health and improvement of treatment and facilities for troubled people.

8.2.6.6. Children will assist people who have been emotionally disturbed to adjust to community life.

8.2.6.7. Children will support research which attempts to determine causes and prevention measures for emotional disturbance.

INSTRUCTIONAL STRATEGIES

THE HEALTH DOMAIN

Lesson Plan

Scope

This lesson plan is designed to teach that the most important thing your body needs in order to be strong and healthy is food. But the body needs the right foods in the right amounts. The lesson plan teaches the Four Basic Food Groups and gives examples of the foods in each of the groups. It is advantageous for the students to learn the Four Basic Food Groups because what they eat directly affects their growth, appearance, endurance, and resistance to disease.

Objective: 5.2.2.1. The learner will identify the Four Basic Food Groups. Children will identify the food groups and give examples of the foods in each group.

Initial Presentation

Tell the children it is time to work on a new health skill. Explain to students that they are going to learn to identify food groups and give example of the foods in each group. Remind the children that they already know the most important thing their body needs in order to be strong and healthy is food. Guide students to realize that they can choose to be strong and healthy by eating the right amounts and the right foods. Ask the children, "What are some foods that help your body stay healthy? How often should you eat such food? Why? How can you make sure you are eating the right amount of food?" Remind the children that an important point to stress is the idea that different people need different amounts of food depending on how old they are, how big they are, how much exercise they get, etc. Explain to the students that variety is the magic word. Most people like some foods better than others and most eat more of some foods than others. But the secret to glowing health is eating many different kinds of food and in the right amounts.

To begin, tell the students they need some kind of guide. A simple guide has been developed by our federal government. This guide tells two important things. It lists the four groups of food. The guide also tells how much of each group is needed each day. Tell the students to get out their writing materials (braille writers and/or pencils and paper). Read and explain the objective, including the mastery criteria, to the students. Have the students copy the objective from dictation, and tell them to keep it in their notebooks. Emphasize that they are going to learn to identify food groups and give examples of the foods in each food group. The different groups of food are called the Four Basic Foods.

State the Four Basic Food Groups: The milk group, the meat group, the fruit and vegetable group, and the bread and cereal group. Show and verbally describe picture posters of some foods in each of the food groups. Call the students' attention to the amount of food from each group that the body needs daily. Each day a person needs at least four cups of milk. Some of the daily supply of milk can be met by eating milk foods such as ice cream, cream soups or sauces, pudding, butter, or cheese. Milk foods help build strong bones and teeth. Each day a person needs at least two servings of meat. In the meat group are found all the meats, fish, and poultry. Explain to the children that poultry means the bird animals such as chickens, turkeys, ducks, pheasants, and quail. Also found in the meat group are peas, beans, nuts, and eggs. These foods are called meat substitutes because they help the body in the same way that meats do. The meat group foods are best known as foods that build the body. Each day a person needs four or more servings of fruits and vegetables. The choices from the fruit and vegetable group can be raw or cooked, but should include a citrus fruit or its juice, a green leafy vegetable, and a yellow vegetable.

Vegetables and fruits help the body in the same ways. Each day a person needs four servings from the bread-cereals group. Bread and hot or cold cereals are the most nutritious foods in this group. Macaroni, spaghetti, noodles, pies, cakes and rolls are other foods in the bread-cereals group. Remind the students that the food a person eats supplies the body with all the nutrients it needs for growth, energy, repair, and the functioning of the body's systems. These vital nutrients are divided into carbohydrates, fats, proteins, vitamins, and minerals. Of course, the body must have water, too. Tell the students that the nutrients the body needs are scattered widely throughout many different foods. Planning a nourishing diet is made easy by the Four Basic Food Groups. By following this simple plan, people are assured of getting enough of the vitamins, minerals, carbohydrates, and proteins which give them vim and vigor. Give the students a written chart of the Four Basic Food Groups. (See chart.) Ask students to explain the chart.

Call the students' attention to the unit on foods in their health books (Braille and/or large print). Tell the children to read the unit. Ask the students to learn and then explain the following vocabulary words: calorie, carbohydrates, proteins, vitamins, minerals and fats. Reinforce students' responses and attending behavior.

Four Basic Food Groups

Sample Chart

Our government food guide tells us how much of each food group we should have each day.

You can remember how much of three groups you need by saying "4 or more." 4 or more servings of the vegetable and fruit group; 4 or more servings of the bread and cereal group; 4 or more cups of milk, including milk foods.

For one group you say, "2 or more." This is the meat group. 2 or more servings of meat or meat substitutes.

Check your "4 or more" and "2 or more" each day.

Instruction and Practice

Provide the student with a practice session. Have the children read the unit from their books on the milk group, the meat group, the fruit and vegetable group, and the bread-cereal group. Ask the students to give examples of the foods in each food group. The time allowed for this practice session should be one class period (approximately 55 minutes). There may be variations of this rule depending on the students. The teacher should use his or her own judgment. While children are working, check with each one individually to see if they are having difficulty, and provide them with corrective feedback. Call attention to the names of the Four Basic Food groups and give examples of the foods in each food group. After students have completed this activity, provide them with a practice written session. While the students are writing the food groups with examples of each, provide them with corrective feedback. When they complete this practice session, review the correct answers. Let the students use their Health books during the initial practice sessions. (Approximate practice time, 1 class period).

Provide another practice session if necessary to identify food groups and give examples of each. Feedback procedures should be given as described previously. Let students use their Health books. Provide as many practice sessions as are needed as described above, but gradually encourage students not to use their Health books. Continue to provide appropriate knowledge of results and reinforcement.

Oral and written recitation activities must be incorporated into instruction and practice. The activities should include Health books, food chart, oral questions, and described poster pictures. Students should be asked to write and name the Four Basic Food groups giving examples of each, and describe the right amount of each for every day. No help can be received during this activity. Continue to provide corrective feedback and reinforcement during recitation.

Students should be encouraged to realize that eating well means two things. It means eating enough food each day to take care of the body's needs and it means eating some food from each of the four groups.

Evaluation

The initial presentation and instruction and practice activities described above will probably take a week to complete (55 minutes a day). When the students are completing the activities with few errors, you should begin to evaluate your objective. Your evaluation should take one class period, about 55 minutes. The evaluation will consist of students identifying the Four Basic Food groups and giving examples of the foods in each group. Written instructions (braille and/or large print), will be provided for students.

Sample Evaluation

Directions: Make four columns on your paper. A, B, C, and D. Name each of the Four Basic Food groups and give examples of the foods in each of the food groups in these columns. You will have one class period to complete this assignment. Do your best and good luck!

Generalization and Transfer

Review the procedure pertaining to identifying the food groups giving examples of the foods in each food group. Tell the students they will be tested on these procedures again in a few days. Specify that you want them to be able to name orally and write the Four Basic Food Groups and give examples of the foods in each food group independently. Review the food groups and examples. Give the students a practice test. Plan half the practice time it took for the original practice session learnings. The material and activities should be different from the activities used for acquisition. Possible activities include:

1. Integrating health with social studies by planning balanced meals and using foods from special parts of the world.
2. Preparing a notebook on nutrients.
3. Making a menu for a day with balanced meals.
4. Planning a bulletin board display of the food groups.

Evaluate for retention after these practice sessions.

The objective and scope of this lesson plan has two transfer tasks. First, the student should be able to choose the right foods in the right amounts to supply his/her body's needs in day to day activities. Second, the student should be able to chart different kinds of foods to make well balanced diets. An example of an activity is to make charts showing different kinds of foods such as carbohydrates, fats, proteins, minerals, and vitamins. Another example of an activity is a shopping trip to a grocery store to buy foods representative of the foods in each of the Four Basic Food Groups. Describe the overlap between the old and the new tasks. Remind the students that they are fortunate to live in a country where there is a plentiful supply of all the good body-building foods. Stress that children need to learn how to identify food groups and give examples of the foods in each food group. Enthusiastically tell the children that a delicious meal can cheer them up if they are in a bad mood, and that they can keep themselves going, growing, and glowing by eating regular well-balanced meals.

Lesson Plan

Scope

The following lesson plan is designed to help the children understand how they can guard themselves against disease, grasp the meaning of the word "resistance," and know that the proper diet helps to fight disease. Concepts of sufficient rest plus methods of avoiding disease are introduced.

Objective 4.2.2.0.

Given a representative sample of test items, children will demonstrate their understanding of how they guard against disease.

Criterion: 70% accuracy on the Health and Safety Test - Level 4

Initial Presentation

Filmstrip: "Keeping a Healthy Community" - second showing, "You remember we had this filmstrip before in our last chapter on microbes and you will remember many things you can do to keep yourself healthy."

Write "My Health" on chalkboard.

"What is one thing you remember to do to stay healthy? When you catch a cold or flu, what can you do to help others keep from getting sick too?"

Write "Other's Health" on the chalkboard. Have children recall how to protect family members and list those methods.

"What public health services do you know about in our community? Look in the local telephone directory for assistance." Obtain brochures and pass among children.

Make poster entitled, "Keeping a Healthy Community." Make a list such as fire, tornado, flood, and other happenings. "What can you do to help?"

You will find our vocabulary of terms on these print and braille sheets. You may copy each word and then look up the definition in your Dictionary of Health Words and write the definitions in your health notebook. (The children may be reminded that the prefix, "anti," in antiseptic means against.)

antiseptic
influenza
conquer
dangerous
communicable diseases
microbes
Fahrenheit
bacteria
health
pollution
viruses
infection
pasteurization
vaccine
rabies
resistance

"What do we call living things that are too small to be seen without a microscope? You remember the story we read about the Dutchman, Anton van Leeuwenhoek, who lived about three hundred (300) years ago and how he found microbes in a drop of water with a simple magnifying glass: He called the objects "little animals." Today we know that there are many different shapes and they are called bacteria. Some are straight like thread, others are round. Bacteria are so small that hundreds of thousands can live in a space no larger than the point of a pencil.

Bacteria make their homes everywhere: in the water, in the air we breathe, in soil, on plants and animals, and on dead or decayed matter. Some scientists believe that bacteria are the oldest form of life on earth. And they are the simplest form of life. They have only a cell wall and are so small that it is difficult to study them even under a powerful microscope.

Some bacteria grow to full size and divide into two cells in about fifteen minutes. Each of these cells divide again and again into two new cells and keep dividing. They can be good or bad. At room temperature they can cause milk to sour in about one hour.

Some bacteria are helpful. They can cause sweet cider to change to vinegar; others help change grape juice into wine; while still other bacteria cause milk and cream to sour for cottage cheese. But much bacteria is harmful and will get into meat and other foods poisoning them. They can enter your body through your nose and make their way to your blood stream through a simple cut or scratch. These bad bacteria eat up the nutrients from food causing the good cells to starve; also, some bacteria give off poisons and fill your body with waste materials. That is why it is important to clean every scratch and cut. Be sure to wash off the harmful bacteria and to put antiseptic on the spot in order to kill the bacteria.

You remember in our last unit we studied about a Frenchman, Louis Pasteur, who lived about one hundred and fifty (150) years ago. I will tell you about how he had a friend when he was a child. The boy was bitten by a mad dog who had rabies, a disease which makes animals act in strange ways. Soon the village blacksmith came running to the boy with a red hot poker iron. The blacksmith burned the poison out of the boy's wounds. This was the only known treatment then and, of course, the child screamed with pain. Louis never forgot this. The next summer his baby sister was very sick and in pain. His mother said the milk made her and the other village children sick.

Louis wondered if burning the poison out of milk would work. Later he discovered that French wine makers boiled wine to kill "wee germs" and he discovered also that heating the milk killed the disease causing bacteria. Soon people all over began to "pasteurize" their milk. They even began to boil water to make it free from disease. Pasteur had a fine laboratory. He proved that chemicals would kill bacteria; then doctors and hospital workers learned to keep their equipment clean and free of germs and, thus, prevented much infection and suffering. But the greatest gift Pasteur has given mankind is an injection which prevents rabies in animals and cures it in man. As a result of Pasteur's discovery, doctors and scientists began to study bacteria and other microbes called viruses. Today we have vaccines for smallpox, diptheria, typhoid fever, polio, and many other diseases.

Instruction and Practice

"How does being sick affect the way you feel? You know there are many ways we can guard against microbes in our daily lives. Would someone share how you keep your body healthy?" (Discussion)

"In order to be healthy our whole person - our body, mind, and emotions- must be balanced. Each one of us is responsible for our own state of health. Illness is a message that something is wrong. Good health promotes happiness."

"Look at the picture of the children on page 64 of You Learn and Change (Harcourt, Brace, Jovanovich, Inc., 1977). Do these children look happy? Are they healthy? Please describe the picture. Read page 65 silently. Tomorrow bring some pictures of people who are having fun. Braille students may write sentences telling about a day when they felt great and a day when they were sick."

"Strong healthy people have high resistance. Their bodies are ready to fight harmful microbes. We can choose to be strong and healthy by eating the right amounts and kinds of foods. Let's read about Marianne's class on page 66. What could you do against such microbes? Name some foods that help your body remain healthy. How can you make sure you are eating the right kinds of food? Remember the basic groups?
See illustration I. (Study) What is resistance? Did you give your

body the right food today? Now let's make a chart. A column on the left will be titled, "Foods That Help." The right column will be "Foods That Don't Help." This nutrition chart can help."

We can choose to be healthy by choosing to stay away from those who have a communicable disease, by keeping ourselves clean, and by keeping our resistance high by selecting "appropriate" food. Look at the picture on page 68 and describe.

"Yes, exercise is so important! When you exercise, what happens to your lungs? How does this affect your blood? Does this help your body guard against microbes? How do exercise and more oxygen in your lungs help to fight microbes? What happens to your body while you sleep? Why does a tired person become sick easier than a rested person?" Draw a picture showing how a microbe invades a healthy cell and multiplies,

We not only choose to be healthy by getting proper food and enough exercise, but we also choose to be strong and healthy by wearing warm clothing in cold weather and changing into warm dry clothes quickly when we get wet. "What does your body do to make more heat when it is cold? How about clothing in warm weather? cold weather?"

"Where did Ray and his friends go? Was the old pop bottle clean after he rinsed it? How does your family make sure that dishes and glasses washed at home are safe?"

Experiment - How do hands carry germs or bacteria?

Touch a piece of bread when your hands are dirty and place it in a labeled jar. Then wash your hands thoroughly with warm water and soap, dry your hands, and touch another piece of bread. Put it in a second labeled jar. (After a week or two the piece of bread that was touched with the dirty hands will have more mold on it.)

"Do you remember what a communicable disease is? How can you protect food from microbes?"

"How can you keep your pets healthy? What is the name of the disease dogs and other animal pets get? What can you do to keep pets safe from rabies?"

Evaluation

Sample Test

FILL IN THE BLANKS
WITH ONE OF THE FOLLOWING WORDS

communicable diseases
microbes
influenza
bacteria
viruses
resistance
dangerous
conquer

1. Plants and animals too small to see without a microscope are

____________________. Two kinds are ________________________

and ______ _____________.

2. A sickness that can spread from person to person is a

_____________________ ________________________.

3. One kind of communicable disease is ______________________________.

4. If your body is ready to fight microbes, you have high________________.

5. If your body is strong and healthy, your fighting cells will

_______________ most disease microbes.

6. Swimming in polluted water is ________________________.

Sample Test

TRUE-FALSE

If the statement is true write T in the blank; if false write F. Braille students will number 1-10 and write T or F accordingly.

1. Two kinds of microbes are bacteria and viruses. ____
2. Anton van Leeuwenhoek discovered bacteria under a magnifying glass and called them "little animals." ____
3. Bacteria multiply very rapidly when water, food and warmth are present. ____
4. All bacteria are bad. ____
5. Bacteria growth is slowed down by cooking or refrigeration. ____
6. Louis Pasteur, a great man, established that bacteria causes many diseases, invented pasteurization, and discovered a cure for rabies. ____
7. A vaccine is helpful in making vinegar. ____
8. Adequate sleep and rest, exercise, a well balanced diet, and proper clothing are important measures for us to take in guarding against disease. ____
9. We can avoid harmful microbes by avoiding unsafe food and water and sick animals. ____
10. Strong, healthy people have a high resistance against disease microbes. ____

MATCH the following words with the correct definition by writing the number of the word in the blank next to the definition. Braille students should write each word and beside each write the correct letter of its corresponding definition.

1. infection	____	a. tiny microbes smaller than bacteria that can grow and multiply inside a living cell
2. health	____	b. condition caused by harmful bacteria or viruses growing in your body
3. antiseptic	____	c. a substance that stops the action or growth of bacteria
4. viruses	____	d. a condition of being well and strong
5. pasteurization	____	e. a communicable disease
6. influenza	____	f. method of heating milk to 145° Fahrenheit for killing harmful bacteria in milk

Generalization and Transfer

Our senses can often tell us if water or food is contaminated, spoiled, or polluted. It is very important to avoid eating or drinking anything suspected to be unsafe. Spoiled food will look and smell terrible. The only safe water is city water treated by protective chemicals or water that has been tested and proven safe. Rare mountain streams or spring water are sometimes safe but it is important to trust the judgment of a reliable adult in this instance. Some hikers and campers use special tablets purchased in a pharmacy or drug store which, when dissolved in water, make it safe for human consumption; but if there is a question concerning the purity of water, it is best to leave it alone. You also know that food such as meat or potato salad or any food containing mayonnaise spoils very quickly. Be sure to heat such food to over 200° Fahrenheit or keep it refrigerated after cooling it.

Also, it is most important to remember to wash all cooking tools and utensils very carefully in hot soapy water. Raw meat contaminates plates, chop boards and knives with microbes which can cause serious food poisoning when ingested.

And, of course, it is important for you to be able to identify plants like poison ivy and sumac which may cause an allergic reaction when you play or hike outside in wooded areas; or accompany someone who is knowledgeable and can offer guidance. Naturally, you want to stay away from strange animals and neither encourage nor pet them. Rabies is still a real threat.

A healthy person is a well-balanced one. He/she gets at least eight to ten (8-10) hours of sleep each night, keeps clean in mind, body and spirit, gets sufficient exercise and wears appropriate clothing for the occasion and season. By keeping a regular schedule and by leading a balanced life of working, eating, playing, resting and observing rules of cleanliness, a person should be able to resist disease and live the happy life of a well adjusted, physically fit individual.

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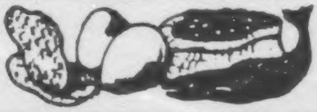
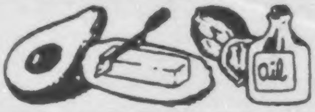
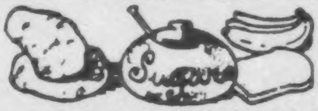
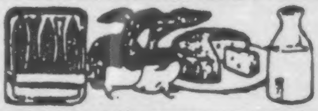
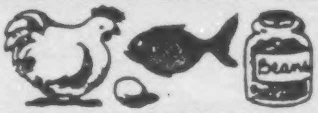
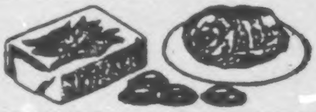
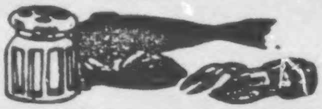
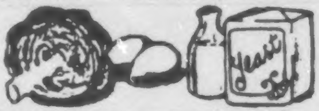
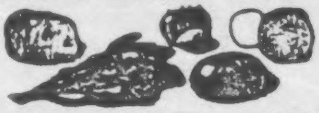
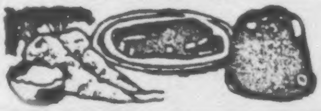
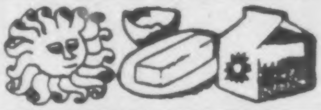
ILLUSTRATION 1

NUTRIENTS WE NEED

NUTRIENT	What It Does	Good Sources
PROTEIN	Builds and repairs body tissues. Helps form antibodies to fight infection. Is a part of hormones and enzymes that help with digestion and growth.	
FAT	Supplies a lot of energy in a small amount of food. Needed for healthy skin.	
CARBOHYDRATE	Supplies energy. Helps body use nutrients.	
CALCIUM	Helps build strong bones and teeth. Helps blood clot. Helps muscles and nerves work normally.	
PHOSPHORUS	Helps build strong bones and teeth. Needed by some enzymes which help change food to energy.	
IRON	Combines with protein to make hemoglobin, the red substance in blood that carries oxygen from lungs to cells.	
IODINE	Needed for proper working of thyroid gland.	
RIBOFLAVIN	Helps cells use oxygen. Helps maintain good vision. Needed for smooth skin.	
VITAMIN C	Helps bind cells together. Strengthens walls of blood vessels. Needed for healthy gums. Helps body resist infection.	
VITAMIN A	Helps keep skin healthy. Prevents night blindness. Helps body resist infection.	
VITAMIN D	Helps body absorb calcium and phosphorus.	

Lesson Plan

Scope

This lesson plan is limited to the function of the digestive system only.

Objective 7.4.2.1

Children will understand the functioning of the digestive system.

Initial Presentation

Get the students' attention by enthusiastically telling them that it is time for health. Then read and explain the objective. Tell the students that the lesson should be interesting because they are going to study the digestive system of the body. Ask the students what will they expect to learn from studying the digestive system. After their comments, tell them that a probe into the digestive system will reveal several factors and will answer the following questions:

1. What are the parts of the alimentary canal? Where does digestion take place? What are enzymes?
2. How does digested food travel to all of the body cells?
3. What are some diseases of the alimentary canal?

Tell them that food is digested in the alimentary canal, which consists of the mouth and throat, gullet or esophagus, stomach, small intestine, and large intestine. Tell them that the canal is long in comparison to the size of the body. A person six feet (6') tall may have a canal thirty feet (30') long. For most people the canal is about five times longer than the body. Most of it is so folded and looped that it is packed into a very small space.

Tell them that digestion goes on in three (3) parts of the alimentary canal - mouth, stomach, and small intestine. Food is broken down in two ways - by mechanical action and by chemical action. Then define mechanical digestion. In mechanical digestion, food is broken up into small bits and thoroughly mixed with digestive juices. The process begins with the chewing of food in the mouth. Then the stomach and the small intestine churn and break it up into still smaller pieces. After defining mechanical digestion, explain chemical digestion. Although mechanical digestion treats the food particles roughly, fat remains fat, and protein remains protein. Most of the molecules are still too large to pass through a cell membrane. It is chemical action that breaks large food molecules down into small ones that can pass through cell membranes. This action is caused by enzymes made by glands in the digestive system. Ask what is an enzyme? Tell them an enzyme is a juice that can make other substances change without changing itself. Therefore, a very small amount of an enzyme can cause a large amount of digestion. Many enzymes are present in the digestive juices. Each enzyme can affect only one certain kind of foodstuff. An enzyme that works on protein has no effect on starch.

After students have said what they think about digestion in the mouth, tell them that as one chews food mixes with saliva, which flows into the mouth through ducts of the three pairs of salivary glands: the parotid, the largest; the submaxillary, and the sublingual glands. Ask the question, "How does the food travel from the mouth to the stomach?" Wait for the responses from students. Then ask, "Is it gravity?" Tell students to make an observation to find out. Tell them to observe a cat drinking milk. Note that a cat drinks with his head down - lower than his stomach. The milk is swallowed against gravity. A horse would show this better. A giraffe drinking water would show it best of all.

As soon as a person swallows, a ring of muscle starts a worm-like motion along the gullet. Successive rings or muscles contract to push the food along.

This action is known as peristalsis, and it continues to push the food - although slowly - through the stomach and small and large intestines.

Instruction and Practice

Each student will be provided with a braille or large print book and work sheets. Each work sheet will contain several questions about the digestive system. For example: What makes food travel from the mouth to the stomach? This will be individual work assigned to each student.

After students have finished the questions, the class will hold a discussion of questions to check for the correct answers. Questions will be entertained and corrections made.

The teacher will assign new questions each day and these will be discussed in class with corrections made. This lesson should be taught for at least a week.

Evaluation

Activities involved in the initial presentation and instruction and practice described prior to this section will probably take several days to complete. Upon completion, a written examination will be given to see how well each student understands the digestive system. If mastery is not attained, this material should be re-taught in the very near future.

Generalization and Transfer

Instruction throughout the learning period will focus on the importance of knowing the function of the digestive system. This type of information will meet the needs of all levels of ability. This information will help one to know how to protect his/her digestive system and perhaps his/her family and friends.

In other units of study, the child will learn what foods help produce enzymes that digest food in the stomach and small intestine. It is important that students eat the foods in appropriate proportions.

For this lesson, the child will be encouraged to transfer his knowledge of mechanical digestion in the mouth by chewing his food thoroughly.

TEST 7.4.2.1

Answer each question below with complete statements:

1. What is digestion?

2. Where does the digestion begin?

3. What are the parts of the alimentary canal?

4. What are enzymes?

5. What are some diseases of the alimentary canal?

6. Name the three parts of the alimentary canal where digestion takes place.

7. Name the two ways in which food is broken down.

8. Will you now, as a result of your study, change any of your health habits?

LESSON PLAN

Scope

The following lesson plan teaches the learner to describe the function of the pituitary gland.

Objective - 6.2.1.2

Children will describe the function of the pituitary gland.

Initial Presentation

Read and explain the objective, including the mastery criteria to the students.

Say to the pupils, "You already can tell us something about the endocrine glands." Students should say that the body is made up of millions of cells. Some of these cells work together in groups called endocrine glands. There are endocrine glands in many different parts of the body. These glands help control the way the body works. To do this, they make chemical substances called hormones. Different endocrine glands put different hormones into the blood. The blood carries the hormones throughout the body. Because they travel around to do their work, hormones are sometimes known as chemical messengers.

Say to the class, "Endocrine glands can cause great changes in your body. The smallest but most important of these glands is the pituitary. The pituitary gland makes many different hormones. One of the most important is the growth hormone. It has the job of making your bones grow."

Present blind students with a thermoform copy of an outline of the human body with location of endocrine glands emphasized. Partially sighted students need a dark, large print outline. Help students locate the pituitary gland.

Say to the students, "How you grow depends on how much growth hormone your pituitary gland makes. If there is a large amount of growth hormone in your blood, you will grow tall. What do you think would happen if there were an average amount of this hormone in your blood? A small amount."

Students should say that an average amount of hormone would probably produce a person of average height. A small amount of hormone would probably produce a person of unusually short height. Emphasize to the students that just because a person is short does not mean that his pituitary gland does not produce enough of the hormone. Heredity plays an important part in height.

Say to the pupils, "Sometimes people grow so tall or stay so short that they set a world's record. So far, the tallest person in the world grew nearly nine feet (9') tall. This person was a giant. The shortest person grew only twenty-three inches (23") tall. This person was a dwarf. What is one reason they might have grown the way they did?"

Students should say that the giant's pituitary gland probably produced too much hormone and the dwarf's produced too little. Reinforce students' comments.

Say to the pupil "There aren't very many giants or dwarfs in the world. What does this tell you about the way the pituitary gland usually works?"

Students should say that the pituitary gland in most people produces an average amount of hormone because most people are of average height.

Instruction and Practice

Give each child an outline of the human body with the location of the endocrine glands emphasized. Help each student locate the pituitary gland. Students in groups of two should be allowed to assist each other and verify their findings. Move among the students and offer help when needed.

Print students should have a copy of the Guiness Book of World Records available. Blind students should have a copy of the braille edition of an encyclopedia or the Guiness Book of World Records. Students should find information about and pictures of the tallest and shortest persons in the world. After finding these articles, allow students to read them orally. Discuss with the students the part the pituitary gland played in the person's development.

Give each sighted student a yardstick and each blind student a braille yardstick. Help the students measure the wall and mark the place that indicates the giant's and the dwarf's height. Reinforce student's responses.

Allow students to write a description of the pituitary gland and the function it has. Any interested students may read their paragraphs orally. Reinforce students and make corrections as necessary.

Evaluation

The initial presentation and instruction and practice activities will probably take 3 to 4 days to complete. Each session will probably last forty to fifty minutes per day. When the students are able to describe the function of the pituitary gland without error, begin to evaluate the objective. Given 30 minutes, students will write a paragraph describing the function of the pituitary gland.

Generalization and Transfer

Throughout the lesson emphasis will be placed on knowledge of the function of the pituitary gland as it relates to the students' own health and well-being. A knowledge of the pituitary gland's function should help the students have compassion for people with growth problems related to the pituitary gland.

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SAMPLE LESSON PLAN

HEALTH

Scope

This lesson plan is designed to teach the need of different amount of nutrients for different people and that health can be affected if they get too much or too little.

Objective - 6.2.2.1

Children will explain that different people need different amounts of nutrients and that health can be affected if they get too much or too little of what they need.

Initial Presentation

Most students at this level are at a stage of concrete operations. They learn best through direct sensory involvement with objects. They need to touch, smell, taste, and listen to and look at objects they are learning about. At this stage children ask questions as they explore their environment.

While learning about the fruit and vegetable groups students should touch, taste, and smell many fruits and vegetables in addition to identify pictures in magazines.

Define vitamins and U.S.R.D.A* for adults and children over four years of age. List symptoms of deficiency and overconsumption. Vitamins are nutrients which are essential for life itself. Vitamins have not been demonstrated to cure an illness other than one resulting from a deficient intake of the vitamin being considered.

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*United States Recommended Daily Allowance

Vitamins	U.S.R.D.A.	Deficiency Symptoms	Overcomsumption
A	5000 IU*	mild: night-blindness, diarrhea, intestinal infection, impaired growth	mild: nausea, irritability, blurred vision
D	400 IU	Rickets in Children	mild: nausea, weight loss, irritability
E	30 IU	possible anemia in low birth-weight infants	nontoxic under normal conditions
C	60 Mg	mild: bruise easily bleeding gums severe: scurvy	when megadose is discontinued, deficiency symptoms may briefly appear until body adapts
Niacin	20 Mg	skin and gastro-intestinal, lesions, anorexia, weakness, irritability, vertigo severe: pellagra	flushing headache, cramps, nausea for nicotonic acid

Ask class to do research on the other vitamins for an assignment.

Knowing the importance of good nutrition helps us to choose the proper sources of food to obtain the various vitamins for good health. These are some sources for vitamins listed.

Vitamins	Significant Sources
A	liver, butter, whole milk, cheese, egg yolk, carrots, leafy green vegetables.
D	fish oils, egg yolk, margarine
E	vegetable oil, shortening, wheat germ, whole grain products
C	broccoli, collards, brussel sprouts, strawberries, oranges
Niacin	liver, meat, poultry, fish, peanuts

* International Unit

After reviewing the sources of vitamins, children will learn some of their major psysiological functions. These should be given out on a chart to each student.

Vitamins	Psysiological Functions
A	Assists formation and maintenance of skin. Functions in visual processes. Promotes bone and tooth development.
D	Promotes ossification of bones and teeth, increases intestinal absorption of calcium
E	Prevents cell membrane damage
C	Strengthens blood vessels, hastens healing of wounds and bones
Niacin	Promotes healthy skin, nerves, and digestive tract, aids digestion

Ask class to discuss ways in which it is helpful to know about proper nutrition.

The class will play a Food Bingo game. The squares contain pictures of food items and is played like regular Bingo. The teacher presents statements about food. The students must cover the pictured foods on their cards that apply to the statements given.

This game is intended for review of previous learning.

Instruction and Practice

Provide a practice session for each vitamin learned (A-D-E-C-Niacin) and a session with all together.

On a work sheet write the vitamins in the left hand column and mix the sources in the right hand column. Have students match the correct vitamin with its source. Review and illustrate each group before practice. Continue to provide experiences until mastery is attained. Give instant feedback during practice sessions.

See related practice.

Evaluation

When students are completing the practice sessions with minimal errors, evaluation of the objective should begin. See evaluation test.

Generalization and Transfer

Review vitamins taught. Tell students they will be tested on each. Specify that you want them to be able to (1) write the Vitamins and (2) write the Vitamins and functions of each that was not taught in class. Construct practice activities and materials like those used for acquisition teaching. This makes the required responses and stimuli very similar.

Students will be asked to write menus consisting of the recommended daily allowance of vitamins.

Possible Activities:

1. Timed worksheets to improve rate of response.
2. Challenge matches where two students try to stump each other. Students should be able to name other vitamins that are not used in the original practice sessions.

RELATED PRACTICE

Match the correct sources with each vitamin:

Vitamins		Sources
1. A	----	broccoli, collards, and strawberries
2. D	----	liver, meat, poultry, and fish
3. E	----	dairy products, margarine, and fish oils
4. C	----	carrots, leafy green vegetables and pumpkins
5. Niacin	----	vegetable oil, wheat germ, and whole grain products.

EVALUATIVE TEST 6.2.2.1

Complete the following:

	USRDA	Sources	Deficiency Symptoms
Vitamin A			
Vitamin D			
Vitamin E			
Vitamin C			
Niacin			

CHAPTER NINE

THE SCIENCE DOMAIN

Broad Skills, Enabling Skills,
Specific Skills, and Record Sheet
Science Domain

Table 1

Science Domain

Level	Pre-Test	Post-Test	Life Science	
5	____	____	5.1.1.	Identify tissue and type of cell
	____	____	5.1.2.	Name and describe function of tissue, organ, and body system
	____	____	5.1.3.	Classify plants by phyla
	____	____	5.1.4.	Classify animals by vertebrate/invertebrate
	____	____	5.1.5.	Endangered and extinct species
	____	____	5.1.6.	Obtaining food: plants and animals
	____	____	5.1.7.	Nutritionally balanced menu
	____	____	5.1.8.	Digestive process
	____	____	5.1.9.	Movement of food through the intestines
	____	____	5.1.10.	Effect of enzymes on digestion
6	____	____	6.1.1.	Cell function
	____	____	6.1.2.	Cell reproduction
	____	____	6.1.3.	Changing the genetic code through selective breeding

Level	Pre-Test	Post-Test	Life Science	
6	____	____	6.1.4.	Define heredity
	____	____	6.1.5.	Name scientists who studied heredity
	____	____	6.1.6.	Define radiant energy, interdependence, ecosystem
	____	____	6.1.7.	Living thing's reliance on radiant energy
	____	____	6.1.8.	Define adaptation
	____	____	6.1.9.	Adaptive structures and functions in plants and animals
	____	____	6.1.10.	Structures and functions of organisms
	____	____	6.1.11.	Careers in the use and conservation of plants and animals
	____	____	6.1.12.	Function of skeleton
	____	____	6.1.13.	Major bones of skeleton
	____	____	6.1.14.	Joints, ligaments, and cartilage
	____	____	6.1.15.	Muscles and movement
	____	____	6.1.16.	Bone diseases
	____	____	6.1.17.	Teeth: parts, care, and function

Level	Pre-Test	Post-Test		Physical Science
5	____	____	5.2.1.	States of matter
	____	____	5.2.2.	Physical components of matter and molecules
	____	____	5.2.3.	Spread of odors through molecular movement
	____	____	5.2.4.	Atomic structure of common molecules
	____	____	5.2.5.	Define element
	____	____	5.2.6.	Match element names with element symbols
	____	____	5.2.7.	Distinguish between physical change and chemical change
	____	____	5.2.8.	How sound is produced
	____	____	5.2.9.	Organs of speech
	____	____	5.2.10.	Parts and function of the ear
	____	____	5.2.11.	Loud sound and hearing
	____	____	5.2.12.	Protection of hearing
6	____	____	6.2.1.	Define matter
	____	____	6.2.2.	States of matter
	____	____	6.2.3.	Properties of states of matter
	____	____	6.2.4.	Properties common to all states of matter
	____	____	6.2.5.	Special properties of matter

Level	Pre-Test	Post-Test		Physical Science
6	____	____	6.2.6.	Particles which make up matter; particles which make up molecules
	____	____	6.2.7.	Particles which make up atoms
	____	____	6.2.8.	Radioactive elements
	____	____	6.2.9.	Radioactive rays
	____	____	6.2.10.	Define element
	____	____	6.2.11.	Define compound
	____	____	6.2.12.	Define mixture
	____	____	6.2.13.	Changing matter
	____	____	6.2.14.	Define energy
	____	____	6.2.15.	Man's use of energy
	____	____	6.2.16.	Contributions of scientists
				Earth Science
5	____	____	5.3.1.	Factors affecting weather
	____	____	5.3.2.	Airport weather stations
	____	____	5.3.3.	Weather and food costs
	____	____	5.3.4.	Effects of hurricanes
	____	____	5.3.5.	Controlling weather
	____	____	5.3.6.	Pollutants and heat inversions

Level	Pre-Test	Post-Test	Earth Science
5	____	____	5.3.7. Reducing the risk of heat inversions
	____	____	5.3.8. Define ocean
	____	____	5.3.9. Proportion of earth covered by water
	____	____	5.3.10. Factors affecting the amount and kind of ocean life
	____	____	5.3.11. How factors affect ocean life
	____	____	5.3.12 Define and describe continental shelf, midocean ridge, continental drift theory
	____	____	5.3.13. Products of the sea
	____	____	5.3.14. List and describe underwater equipment
	____	____	5.3.15. Theories of the origin of the earth
	____	____	5.3.16. Calculating earth's age
	____	____	5.3.17. Estimating the earth's age
	____	____	5.3.18. Earth's eras
	____	____	5.3.19. Continental drift theory
	____	____	5.3.20. Conservation of usable resources
	____	____	5.3.21. Parts of the solar system
	____	____	5.3.22. Speed of light

Level	Pre-Test	Post-Test		Earth Science
5	____	____	5.3.23.	Solar system distances
	____	____	5.3.24.	Phases of the moon
	____	____	5.3.25.	Effects of moon's revolution around earth
	____	____	5.3.26.	Forces that shaped the lunar surface
	____	____	5.3.27.	Reflector and refractor telescopes
	____	____	5.3.28.	Factors presenting problems in space travel
	____	____	5.3.29.	Benefits of space exploration
6	____	____	6.3.1.	Composition of air
	____	____	6.3.2.	Layers of the atmosphere
	____	____	6.3.3.	Main determinant of the amount of water in the air
	____	____	6.3.4.	Main determinants of weather
	____	____	6.3.5.	Define hydroshere
	____	____	6.3.6.	Absorption of energy by the ocean
	____	____	6.3.7.	Ocean currents
	____	____	6.3.8.	Relationship between ocean depth and pressure
	____	____	6.3.9.	Clouds and precipitation

Level	Pre-Test	Post-Test	Earth Science
6	____	____	6.3.10. Define precipitation
	____	____	6.3.11. Four air masses that affect U.S. weather
	____	____	6.3.12. Weather instruments
	____	____	6.3.13. U.S. Weather Bureau's function
	____	____	6.3.14. Define galaxy

Level	Pre-Test	Post-Test	Living Biosphere	
7	____	____	7.1.1.	Interrelationships among organisms and the environment
	____	____	7.1.2.	Define biosphere
	____	____	7.1.3.	Define ecological niche
	____	____	7.1.4.	Define producer, consumer, parasite, and scavenger
	____	____	7.1.5.	Describe organisms' niches
	____	____	7.1.6.	Biospheric cycles
	____	____	7.1.7.	Define biotic community
	____	____	7.1.8.	Stages of succession
	____	____	7.1.9.	Balance of nature
	____	____	7.1.10.	Define symbiosis and antagonism
	____	____	7.1.11.	Identify food chain and food web
			Living Things in Their Environment	
	____	____	7.2.1.	Define biome
	____	____	7.2.2.	Most populated biomes
	____	____	7.2.3.	Determinants of the amount of food produced in a biome

Level	Pre-Test	Post-Test		Continuity of Life
7	____	____	7.3.1.	Define genes
	____	____	7.3.2.	Define mitosis and meiosis
	____	____	7.3.3.	Natural and artificial modification of the hereditary code
	____	____	7.3.4.	Define speciation
	____	____	7.3.5.	Variation, migration, selection, and isolation
	____	____	7.3.6.	Cross-breeding
	____	____	7.3.7.	Genetics and food production
				Ecology and Man
	____	____	7.4.1.	Survival and the population explosion
	____	____	7.4.2.	Relationships between size of population, level of productivity, and amount of pollution
	____	____	7.4.3.	Changes in the use of land
	____	____	7.4.4.	Water pollution and man
	____	____	7.4.5.	Importance of water pollution
	____	____	7.4.6.	Air pollution
	____	____	7.4.7.	Importance of air pollution

Level	Pre-Test	Post-Test	Biology in Space
7	____	____	7.5.1. Matter in space
	____	____	7.5.2. Taking earth's environment into space
	____	____	7.5.3. Importance of space exploration
	____	____	7.5.4. Define open and closed ecological systems
	____	____	7.5.5. Classify earth's ecology as open or closed
	____	____	7.5.6. Taking earth's environment to space colonies

Level	Pre-Test	Post-Test	Introduction	
8	____	____	8.1.1.	Define scientific investigation
	____	____	8.1.2.	Factors in scientific investigation
	____	____	8.1.3.	Two main types of careers in science
	____	____	8.1.4.	Define roles of pure scientist and technologist
	____	____	8.1.5.	Name 25 careers in science
			The Universe - Overview	
	____	____	8.2.1.	Forms and properties of matter
	____	____	8.2.2.	Atom formations
	____	____	8.2.3.	Define isotope
	____	____	8.2.4.	Atomic bonds
	____	____	8.2.5.	Electromagnetic energy
	____	____	8.2.6.	Evidence of the presence of energy
	____	____	8.2.7.	Types of galaxies, formation, and ages
	____	____	8.2.8.	Enormity of the universe
	____	____	8.2.9.	Define theory, hypothesis, and scientific law
	____	____	8.2.10.	Development of hypotheses
	____	____	8.2.11.	Theories of universe origin

Level	Pre-Test	Post-Test	Stars
8	____	____	8.3.1. Life cycle of stars
	____	____	8.3.2. Determining the age of stars
	____	____	8.3.3. Origins of constellation names
	____	____	8.3.4. Naming and locating constellations
			The Sun
	____	____	8.4.1. Distances in the universe
	____	____	8.4.2. Generation of the sun's energy
			The Moon
	____	____	8.5.1. Phases of the moon
			Space Investigation
	____	____	8.6.1. Benefits of unmanned satellites
	____	____	8.6.2. Benefits of manned space flights
	____	____	8.6.3. Careers in space exploration
			Earth
	____	____	8.7.1. Define lithosphere
	____	____	8.7.2. Define fossil
	____	____	8.7.3. Formation of fossils

Level	Pre-Test	Post-Test	Earth
8	____	____	8.7.4. Define sedimentary rock
	____	____	8.7.5. Identifying minerals in rocks
	____	____	8.7.6. Ocean currents
	____	____	8.7.7. Wind currents
	____	____	8.7.8. Cloud formations and weather prediction
	____	____	8.7.9. Location of natural resources
	____	____	8.7.10. Time zones
	____	____	8.7.11. Information found on maps
	____	____	8.7.12. Causes and cures for man's problems on earth

TAXONOMY OF GOALS AND OBJECTIVES

SCIENCE DOMAIN

END GOAL · SKILLED SCIENCE ACHIEVEMENT

5.0.0 Given a comprehensive examination which is objective and contains 50 items, the student will write responses with 70% accuracy.

LEVEL 5

TOPIC 1: LIFE SCIENCE

5.1.1 Given various kinds of tissue (plant and animal) as seen under a microscope, the student will identify the tissue as plant or animal and tell the names of the kinds of cells within the tissue (nerve, epidermal, etc.) with at least 70% accuracy.

5.1.2 Given three-dimensional models of tissues, organs, and body systems, the student will name each and describe the function of each with at least 70% accuracy.

5.1.3 Given a variety of 25 plants, the student will demonstrate his knowledge of them by classifying each within one of the four plant phyla (Thallophyta, Bryophyta, Pteridophyta, Spermatophyta) with at least 70% accuracy.

5.1.4 Given a variety of 25 animals, the student will demonstrate his knowledge of them by classifying each as a vertebrate or invertebrate with at least 70% accuracy.

5.1.5 Given the task, the student will describe five examples of how man's uses of plants and animals have caused some of them to become endangered or extinct.

5.1.6 Given the task, the student will describe the basic difference between the methods used by plants and animals in order to obtain food.

5.1.7 Given the task and a Food Guide, the student will write a menu which is nutritionally balanced.

5.1.8 Given the task, the student will describe the sequence through which food passes beginning in the mouth and ending in the small intestine with 100% accuracy.

5.1.9 Given the question, "What causes food to move through the intestines," the student will give an accurate oral response.

5.1.10 Given the task, the student will write a description of the effects enzymes have on the food we eat.

TOPIC 2: PHYSICAL SCIENCE

5.2.1 Given the task, the student will list the four states of matter and give two examples of each with 90% accuracy.

5.2.2 Given the task, the student will describe the physical components of matter (molecules) and, in turn, describe the physical components of molecules (atoms).

5.2.3 Given the task, the student will explain how odors are spread by molecular movement with complete accuracy.

5.2.4 Given the task, the student will make a model which illustrates the atomic structure of a common molecule (e.g., water).

5.2.5 Given the task, the student will write a definition of element which is accurate.

5.2.6 Given the names of 15 common elements, the student will match the names with their scientific symbols with 80% accuracy.

5.2.7 Given the task, the student will write an accurate description of the difference between a physical change and a chemical change. The description will include at least one example of each type of change.

5.2.8 Given the task, the student will describe how sound is produced.

5.2.9 Given the task, the student will describe how each of the following plays a part in the production of speech: lungs, larynx, lips, tongue, and teeth. The description will be 100% accurate.

5.2.10 Given the task, the student will describe the parts of the ear and the function of each with regard to hearing. Criterion: 100% accuracy.

5.2.11 When asked, "What is the result of exposure to loud sounds over a long period of time," the student will provide an accurate oral or written response.

5.2.12 Given the task, the student will list five accurate ways he can protect his sense of hearing.

TOPIC 3: EARTH SCIENCES

5.3.1 Given the task, the student will describe several ways in which heat, water movement, and air movement affect the kind of weather we experience. Criterion: At least 80% of the affects will be basically accurate.

5.3.2 Given the task, the student will give an accurate and crucial reason why airports have weather stations.

5.3.3 Given the task, the student will accurately describe how weather affects the price we pay for food.

5.3.4 Given the task, the student will list at least five harmful effects resulting from hurricanes.

5.3.5 Given the task, the student will describe four ways in which scientists are developing ways to control the weather

5.3.6 Given the task, the student will describe how heat inversions are sometimes caused by pollutants in the air.

5.3.7 Given the task, the student will describe how steps can be taken which will lessen the risk of heat inversions caused by pollutants.

5.3.8 Given the task, the student will orally define the meaning of the term, ocean.

5.3.9 Given the task, the student will tell the proportion of the earth's surface that is covered by water.

5.3.10 Given the task, the student will name four factors that affect the amount and kind of life found in the ocean.

5.3.11 Given four factors, salinity, depth, temperature, and light, the student will tell how they affect the amount and kind of life found in the ocean.

5.3.12 Given the task, the student will define and describe the following two formations and theory: a) continental shelf; b) midoceanic ridge; c) continental drift theory.

5.3.13 Given the task, the student will produce a list of products which come from the sea.

5.3.14 Given the task, the student will make a list of equipment which is used for underwater exploration and describe the use of each piece of equipment.

5.3.15 Given the task, the student will produce a chart which lists the main theories that explain the origin of the earth. For each theory, the student will list evidence which supports the theory and indicate what the theory does not explain.

5.3.16 Given the task, the student will name three methods used in calculating the age of the earth.

5.3.17 Given the task, the student will give a current estimate of the age of the earth.

5.3.18 Given the task, the student will name the three main divisions of fossils producing geologic time and the reasons for their division — cenozoic, mesozoic, and paleozoic eras.

5.3.19 Given the task, the student will tell why some scientists believe that the land formations on earth were once one, large land mass.

5.3.20 Given the task, the student will describe why it is important for us to conserve the usable minerals on earth.

5.3.21 Given the task, the student will name all of the main parts of a solar system.

5.3.22 Given the task, the student will tell how far light travels per second.

5.3.23 Given the task, the student will tell how far away earth's nearest "neighbor" is and how far away its most distant neighbor in the solar system is.

5.3.24 Given the task, the student will explain what causes the apparent changes in the moon which we call phases.

5.3.25 Given the task, the student will explain how the moon's revolution around the earth affects the earth.

5.3.26 Given the task, the student will name three forces which have shaped the surface of the moon.

5.3.27 Given the task, the student will explain the main differences between a reflector and a refractor telescope.

5.3.28 Given the task, the student will explain why the following factors present problems in space travel: a) distances in space; b) radiation; c) weightlessness; d) acceleration; e) deceleration.

5.3.29 Given the task, the student will name six practical benefits which have derived from space exploration.

LEVEL 6

TOPIC 1: LIFE SCIENCE

6.1.1 Given the task, the student will describe three ways in which the cell carries on the functions of life.

6.1.2 Given the task, the student will explain how it is possible that the cells which make up an adult are not the very same cells which made up his body as a child. The child should explain cell reproduction and how it allows man to survive.

6.1.3 Given the task, the student will explain how changes in the genetic code can be induced through selective breeding.

6.1.4 Given the task, the student will define the term, heredity.

6.1.5 Given the task, the student will name two scientists whose works have led to important discoveries about heredity: Gregor Mendel and Luther Burbank.

6.1.6 Given the task, the student will define the terms, radiant energy, interdependence, and ecosystem.

6.1.7 Given the task, the student will explain how all living things, not just plants, rely on the capture of radiant energy by green plants for life and survival.

6.1.8 Given the task, the student will define adaptation.

6.1.9 Given the task, the student will select five plants and animals and tell how each is adapted to its environment through its function and structure.

6.1.10 Given the task, the student will select three structures of a given organism and tell how each performs a different function.

6.1.11 Given the task, the student will name six careers which directly deal with the use and conservation of plants and animals.

6.1.12 Given the task, the student will name the main function of the skeletal system.

6.1.13 Given the task, the student will name the major bones of the skeletal system.

6.1.14 Given the task, the student will name the main structures that hold bones together: joints, ligaments, and cartilage. The student will also tell how each structure holds the bones together.

6.1.15 Given the task, the student will name the structures which cause movements of the skeleton: muscles. In addition, the student will describe how such movements are caused.

6.1.16 Given the task, the student will name two diseases which can affect the bones.

6.1.17 Given the task, the student will name the parts of a tooth and describe the care and function of the teeth.

TOPIC 2: PHYSICAL SCIENCE

6.2.1 Given the task, the student will define the term, matter.

6.2.2 Given the task, the student will name the four states in which matter may exist: solids, liquids, gases, and plasma.

6.2.3 Given the task, the student will describe the properties of each state of matter.

6.2.4 Given the task, the student will name and describe the six properties which are common to all forms of matter: inertia, mass, weight, density, porosity, and volume.

6.2.5 Given the task, the student will name several special properties of matter: brittleness, color, odor, elasticity, etc.

6.2.6 Given the task, the student will name the particles which make up matter: molecules. The student will also name the particles that make up molecules: atoms.

6.2.7 Given the task, the student will name the particles that make up atoms: electrons, protons, and neutrons.

6.2.8 Given the task, the student will name three radioactive elements (i.e., elements which give off rays and particles.

6.2.9 Given the task, the student will name the kinds of rays given off by radioactive elements: alpha, beta, gamma.

6.2.10 Given the task, the student will define the term, element.

6.2.11 Given the task, the student will define the term, compound.

6.2.12 Given the task, the student will define the term, mixture.

6.2.13 Given the task, the student will explain how matter is capable of change.

6.2.14 Given the task, the student will define the term, energy.

6.2.15 Given the task, the student will describe six quite different ways in which man uses energy to his own advantage.

6.2.16 Given the task, the student will describe a major benefit derived from the work of each of these scientists: Albert Einstein, Henry Becquerel, Otto Hahn and Fritz Strassman, and Pierre and Marie Curie.

TOPIC 3: EARTH SCIENCE

6.3.1 Given the task, the student will recognize that air is a mixture of gases and name the composition of air.

6.3.2 Given the task, the student will name the layers of the atmosphere: troposphere, stratosphere, ionosphere, and exosphere.

6.3.3 Given the task, the student will name temperature as the main determinant of the amount of water found in the air and explain how this is possible.

6.3.4 Given the task, the student will name the oceans and air as the two main determinants of weather.

6.3.5 Given the task, the student will define the term, hydrosphere.

6.3.6 Given the task, the student will tell why different parts of the ocean absorb different amounts of energy from the sun.

6.3.7 Given the task, the student will tell why currents exist in the oceans.

6.3.8 Given the task, the student will describe the relationship between ocean depth and pressure.

6.3.9 Given the task, the student will explain how water vapor in the air condenses on tiny particles in the air which form clouds and may result in precipitation.

6.3.10 Given the task, the student will define the term, precipitation.

6.3.11 Given the task, the student will name the four main kinds of air masses that affect the weather in the United States: Polar Continental, Polar Maritime, Tropical Continental, and Tropical Maritime.

6.3.12 Given the task, the student will name seven weather instruments and tell their uses: thermometer, rain gauge, mercurial barometeraneroid, wind vane, anemometer, satellites, hygrometer.

6.3.13 Given the task, the student will describe the U.S. Weather Bureau's function.

6.3.14 Given the task, the student will define the term, galaxy.

LEVEL 7

TOPIC 1: LIVING BIOSPHERE

7.1.1 Given the task, the student will describe the interrelationships between given organisms and their environment.

7.1.2 Given the task, the student will define the term, biosphere.

7.1.3 Given the task, the student will define the term, ecological niche.

7.1.4 Given the task, the student will define the terms, producer, consumer, parasite, and scavenger and give three examples of each.

7.1.5 Given the names of several organisms, the student will describe the niche of each.

7.1.6 Given the task, the student will name the three essential cycles within the biosphere: carbon cycle, water cycle, and nitrogen cycle.

7.1.7 Given the task, the student will define the term, biotic community.

7.1.8 Given three biotic communities, the student will study each and identify the stages of succession.

7.1.9 Given the task, the student will define what is meant by the balance of nature within a stable community.

7.1.10 Given the terms, the student will define symbiosis and antagonism.

7.1.11 Given three biotic communities, the student will study each and identify the food chain and food web in each.

TOPIC 2: LIVING THINGS IN THEIR ENVIRONMENT

7.2.1 Given the task, the student will define the term, biome.

7.2.2 Given the task, the student will name the most populated biomes in the world.

7.2.3 Given the task, the student will tell the main determinant of the amount of food produced in a water biome and land biome.

TOPIC 3: CONTINUITY OF LIFE

7.3.1 Given the task, the student will define the term, genes.

7.3.2 Given the task, the student will define the terms, mitosis and meiosis.

7.3.3 Given the task, the student will name two main ways in which the hereditary code may be changed: naturally or artificially.

7.3.4 Given the task, the student will define the term speciation.

7.3.5 Given the task, the student will describe and name the four ways in which speciation may occur: variation, migration, selection, and isolation.

7.3.6 Given the task, the student will offer one example in which new organisms are produced by selectively crossing different species.

7.3.7 Given the task, the student will give an example which illustrates how our knowledge of genetics has meant extra food for the starving.

TOPIC 4: ECOLOGY AND MAN

7.4.1 Given the task, the student will describe why the population explosion is a threat to man's survival.

7.4.2 Given the task, the student will describe the relationships between the size of the population, level of productivity, and amount of pollution.

7.4.3 Given the task, the student will describe how the use of land has changed during the last several hundred years

7.4.4 Given the task, the student will name the most common polluter of water and explain how this happens.

7.4.5 Given the task, the student will explain why the problem of water pollution is so important to man.

7.4.6 Given the task, the student will explain what is meant by polluted air.

7.4.7 Given the task, the student will explain why the problem of air pollution is so important to the survival of man.

TOPIC 5: BIOLOGY IN SPACE

7.5.1 Given the task, the student will name ten types of matter which may be found in space.

7.5.2 Given the task, the student will describe the essential components of his environment that he must take with him if he is to survive in space.

7.5.3 Given the task, the student will tell why it is important to open frontiers in space.

7.5.4 Given the task, the student will define the terms, open ecological system and closed ecological system.

7.5.5 Given the task, the student will classify earth's ecological system as open or closed.

7.5.6 Given the task, the student will intelligently discuss the possibility of man taking his environment with him to establish colonies in space.

TOPIC 1: INTRODUCTION

8.1.1 Given the task, the student will define what is meant by the term, scientific investigation.

8.1.2 Given the task, the student will name two important factors included in scientific investigation: organization and sequential stages.

8.1.3 Given the task, the student will name two main types of careers available to scientists: pure science and technology.

8.1.4 Given the task, the student will define the roles played by pure scientists and technologists.

8.1.5 Given the task, the student will name 25 specific careers in science.

TOPIC 2: THE UNIVERSE - OVERVIEW

8.2.1 Given the task, the student will name the different forms and common properties of matter.

8.2.2 Given the task, the student will recognize and name 10 common atom formations.

8.2.3 Given the task, the student will define the term, isotope.

8.2.4 Given the task, the student will describe how atoms bond chemically to form molecules and how the bonds may be broken to form new molecules.

8.2.5 Given the task, the student will describe several ways in which electromagnetic energy is used to gather information about the universe and how such information may be useful. These forms of electromagnetic energy should be discussed: radio waves, infrared light, ultraviolet X-ray, gamma, and cosmic rays.

8.2.6 Given the fact that energy cannot be seen directly, the student will tell how we gather evidence of its presence.

8.2.7 Given the task, the student will name the types of galaxies, describe how they were formed, and tell their comparative ages.

8.2.8 Given the task, the student will appreciate the possibility of being asked to name 5,000,000 things in the universe.

8.2.9 Given the task, the student will define the terms, theory, hypothesis, and scientific laws.

8.2.10 Given the task, the student will list the steps in developing an hypothesis.

8.2.11 Given the task, the student will name and describe the three main theories of the dynamic origin of the universe: Big Bang, Pulsating, Steady State.

TOPIC 3: STARS

8.3.1 Given the task, the student will recognize the fact that stars have a life cycle and will describe it.

8.3.2 Given the task, the student will tell how the age of a star may be determined.

8.3.3 Given the name of a familiar constellation, the student will tell the story of the origin of the name.

8.3.4 Given the task, the student will name and locate several constellations viewed in the night sky.

TOPIC 4: THE SUN

8.4.1 Given the task, the student will name the following distances: sun to its nearest neighbor; sun to the earth; sun to its most distant neighbor.

8.4.2 Given the task, the student will describe how the sun's energy is generated.

TOPIC 5: THE MOON

8.5.1 Given the task, the student will be able to position a set of models (including the earth, moon, and sun) in order to illustrate any given phase of the moon.

TOPIC 6: SPACE INVESTIGATION

8.6.1 Given the task, the student will describe several benefits derived from unmanned satellites which have probed space.

8.6.2 Given the task, the student will describe several benefits derived from manned flights which have probed space.

8.6.3 Given the task, the student will describe several careers which contributed to the success of the moon walks.

TOPIC 7: EARTH

8.7.1 Given the task, the student will define the term, lithosphere.

8.7.2 Given the task, the student will define the term, fossil.

8.7.3 Given the task, the student will describe how fossils are formed.

8.7.4 Given the task, the student will define the term, sedimentary rock.

8.7.5 Given a rock with large minerals, the student will name the individual minerals.

8.7.6 Given the task, the student will name and locate on a map the major ocean currents, tell their direction, their temperature, and their effect on the polar regions.

8.7.7 Given the task, the student will name and locate on a map the major wind currents, tell their direction, and how this knowledge is used by man.

8.7.8 Given several cloud formations, the student will predict precipitation, temperature, and pressure changes likely to occur with each.

8.7.9 Given a map of the world, the student will locate the sources of various resources and note the unevenness of their distribution.

8.7.10 Given a map containing the time zones, the student will determine equivalent times around the world.

8.7.11 Given the task, the student will name ten kinds of information which may be contained on maps.

8.7.12 Given the task, the student will name problems man causes for himself on earth and will tell how man can work to overcome these problems.

INSTRUCTIONAL STRATEGIES

SCIENCE DOMAIN

Lesson Plan

Scope

This lesson plan is designed to acquaint the learner with various pollutants. In addition to air pollution, food and water pollution may seriously affect a person's health.

This lesson plan is limited to water pollutants.

Objective

The student shall be able to recall various pollutants.

Initial Presentation

Get the students' attention by telling them that it is time for science. Tell them that today's lesson will be a little different from previous lessons studied. Then read and explain the objective. Ask for definitions of pollutants. After several students respond, define pollutant for them if a satisfactory meaning was not given. Example: a pollutant is anything that destroys purity or corrupts. Tell them that there are several types of water pollutants that will be discussed in this lesson.

Instruction and Practice

Each student will be provided with a braille or large print book. Each student will be given a certain type of pollutant to do research on and give a report to the class orally. These reports will be done outside of class and discussed in class daily. The teacher will check the library to make sure that topics assigned are covered in the library. This will prevent the students from running into problems locating materials. At least five days will be devoted to this lesson.

Topics for discussion will include the eight (8) categories of water pollutants that the Department of Health Education and Welfare has listed which hamper or dangerously affect water and health.

Those listed are as follows:

1. Sewerage - includes both domestic and food processing wastes. Some sewerage pollution of lakes and rivers is due to pleasure boats. Frequently, galley and toilet wastes are dumped directly in the water. This practice has become a serious menace where boats are anchored in large numbers. Even more serious is the practice of some towns and cities of dumping such wastes, untreated, directly into rivers.
2. Infectious agents are found in the waste that comes from slaughter houses, chicken farms, motorists, and hospitals.
3. Plant nutrients are the fertilizers that are used on farms to stimulate crop growth. When it rains the fertilizers wash off into the nearby streams and lakes. In the water, they continue to stimulate growth of plant life, which soon chokes the streams and kills off many fish.
4. Organic chemical foreign wastes - these are the newer and perhaps, the more dangerous forms of pollution. Among them are detergents, pesticides, and other chemicals. They have not been in use long enough to determine their long range effect on health, but they are under suspicion. Pesticides are washed into streams from fields when it rains. Both these and the fertilizers are not always totally removed in normal water treatment.

5. Mineral and chemical pollutants from natural sources have to be recognized. There are salts, from natural rock deposits, and sulfates and acids from coal mining, along with wastes from quarries and other natural sites.

6. Sediment as a form of pollution became a problem when the forests around our watersheds were cut down. This exposed the land to the full force of the spring rains, floating soil into the streams to be carried along and gradually deposited as sediment.

7. Radioactive wastes are another of our newer forms of water pollution. They get into water from uranium mining, hospitals, and certain types of industry. At the present time, the level of discharge or radioactive wastes into our streams is considered by scientists to be small, but we are warned that if the present rate should increase, the consequences to health could be serious.

8. Heat is seldom thought of as a pollutant. But large amounts of water are drawn from streams into factories and returned to the streams hot or warm from the manufacturing process. This occurs in such factories as steel mills, coke ovens, petroleum refineries, and nuclear power plants. The heated water kills fish and other aquatic life.

The present emphasis is on interstate area pollution control within a given watershed. What is a watershed? A watershed is a ridge that divides one drainage area from another, the entire area draining into the same streams and lakes.

When it is felt that each topic has been discussed and explained sufficiently, a review session will be held to determine how much learning has taken place and to clear up any misunderstanding.

As a culminating activity each student may make posters on water pollutants and display them in the classrooms and hallways. This should serve to alert other students about the ill effects of polluting our water supply.

Tell the students that most local and state governments have anti-pollution laws to protect their water supplies. However, the enforcement of these laws is sometimes hampered by lack of funds, not enough trained personnel, public indifference, and political considerations.

Mention that in an effort to strengthen state and local governments, federal laws such as the Water Quality Act (WQA) have been passed. The federal laws not only set standards for water quality, but also provide grants to help the states meet their standards.

Evaluation

Activities involved in the initial presentation and instruction and practice activities described prior to this section will take several days to complete. Upon completion a written examination will be given to determine how well the information taught on pollution was attained. If mastery is not attained, this lesson should be taught again at an early date.

Generalization and Transfer

Instruction throughout the learning period will focus on the eight (8) types of water pollutants and their effect on the health of individual and aquatic life. With water, as with food, scientists and engineers are seeking better methods of controlling contamination.

From this lesson we hope that each student will be aware that carelessness can spoil our water supplies and make it unfit to drink and use, thus hampering the life and health of each individual. Hopefully, these students will do what they can to prevent the pollution of water. Clean water, like safe food, means water that is free from physically harmful substances. It means water free from pollution.

SAMPLE WRITTEN TEST

Name________________________________ Date__________________________

POLLUTANTS

Directions: Use complete statements to answer the following questions.

1. Define pollutant.
2. How does radioactive waste get into water?
3. How can heat pollute the water?
4. How do infectious agents get into water?
5. Name the eight (8) types of water pollutants.
6. What are the most dangerous forms of water pollutants?
7. How do state and local governments try to protect their water supplies?
8. In addition to setting standards for water quality, what else do the federal laws provide?
9. Name at least three (3) reasons why pollution laws are not enforced.
10. For what does W. Q. A. stand?

Lesson Plan

Scope

This lesson plan is developed to explain that the solar system is composed of the sun, the planets, their satellites, meteors, and comets.

Objective

Given twenty-five (25) objective questions, the children will demonstrate an understanding that the sun is the center of the solar system and that the planets revolve and rotate in orbits about the sun. Moreover, the children will discover that all planets receive energy from the sun and that all life on earth depends upon the sun.

Initial Presentation

Vocabulary

solar system
satellite
revolves
rotates
thermometer
Fahrenheit
theory
reflect
orbit
planet
liquid
body
star
telescope
astronaut
equator
polar
energy
atmosphere
sun
meteor
comet
radiant

Text

CONCEPTS IN SCIENCE (Green), Newton Edition, Harcourt Brace Jovanovich, 1975. (and lab kit)

Resources

Film: "Planets Around the Sun," Film Library, State of Georgia (12 minutes)

Tape: "Let's Find Out About Earth in Space," Imperial Productions, Inc., 1965.

Books: EXPLORING THE PLANETS, Ray A. Gallant, Doubleday, 1967.
THE NINE PLANETS, Franklyn M. Branley, Crowell, 1971.
A BOOK OF OUTER SPACE FOR YOU, Franklyn M. Branley, Crowell, 1968.
A BOOK OF STARS FOR YOU, Franklyn M. Branley, Crowell, 1967.
AMERICANS ON THE MOON, Gene Gurney, Random, 1970.

"What do you know about the sun? (Accept all responses.) What do you know about the planets? What do you think things on Earth would be like without the sun? (Begin unit on a sunny day.) There is a picture of some children on page 38 (Concepts in Science). What do you think they are doing? (Child with eyes closed is attempting to tell which hand is in the sunlight and which hand is shielded from the sun's rays.) You may read page 39 and group for the activity of feeling sunlight....you actually feel heat rather than light."

Introduce map of the solar system. "What do you think the blue curved lines are?" (Discuss orbit, solar system, planet.) "What is the center of our solar system?" (Assign reading pages 44-45.) "Do you think of Earth as home?"

Investigation

A child holds hand in light from a lamp. Move lamp to discover how far from lamp he can feel heat. Children take turns feeling heat. It is hottest near the bulb.

Concept: "Light energy from the Sun can be changed into heat energy." Write concept on board.

Does the investigation with the lamp tell us anything about the planets and the sun as we see them on the space map? Some planets are nearer to the lamp (the sun) than the other planets are.

Earth is nearer to the sun than most planets are. It is warmer than many. Which planet is hottest? The coldest? Which planets might have living things on them? (Encourage speculation and reasoning.) Remember there are other factors besides distance from the sun which determine the possibility of life. Maybe we'd better wait to make a judgment until we learn more about the solar system.

Suppose we make a model solar system. We need a ruler, construction paper, and paste. Here is a sentence which will help us remember the names and order of the planets in the solar system. "Mary's violet eyes make Johnny stay up nights pacing." Each word in the sentence starts with the beginning letter of a planet. We begin with the planet closest to the sun: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Nepture, Pluto.

While you are cutting and pasting, I'll tell you some facts about the solar system which are interesting.

The sun is a star which is the center of the solar system. It dominates the planets, planetoids and comets which revolve in their respective orbits around the Sun. The satellites or moons revolve around their respective planets. Earth has one moon which reflects light from the sun.

Astronomers in ancient Egypt believed that the Earth was the center of the Universe and that the sun, moon and other planets revolved around the Earth.

Finally, during the 16th Century, Copernicus developed the theory of a sun-centered universe with Earth rotating around the sun each day. Later, Galileo and another scientist, Johanne Kepler, conducted experiments supporting the Copernicus theory. From that time on men have discovered that our solar system is not the whole universe but only a small part of it.

The solar system, named for the sun, is a part of the Milky Way Galaxy which is just one of many galaxies discovered thus far.

A part of Earth is always receiving sunlight while other parts are experiencing the shadow of night as the Earth rotates. The sun is 93,000,000 miles or 150,000,000 kilometers from Earth. And we use energy from the sun - radiant energy. (Spell and write on board.) We see the sun's energy as light and we feel it as heat.

Mercury, Venus, Earth, and Mars are called the inner planets. These are closer to the Sun. The other five planets are called outer planets.

The sun, a star which produces its own light, is like a nuclear reactor in which atoms are continually changing. Scientists think the sun gives off hydrogen atoms which change into helium atoms. In this change an enormous amount of energy is produced. Most of this energy goes into space but some of it reaches bodies in the solar system. Radiant energy from the sun goes out in all directions and its effect decreases with distance. As a result Mercury is intensely hot, too hot for life as we know it. And Pluto is so distant from the sun that it receives little energy. It is unbelievably cold, far too cold to support life - living things as we know them. Earth receives a relatively small amount of energy, but there is enough for the growth of plants, animals, and people.

Do you remember learning about the food-making process on our planet called photosynthesis? We found out that only in light - sunlight - can a plant make food. All animals on Earth depend upon green plants for food. Without light, life as we know it would not exist. Living things cannot survive without food.

Mars, the red planet, is close enough to Earth to be reached by space craft bearing cameras and other machines. It is called the red planet because it appears to be red when observed by astronomers. The diameter of Mars is about half that of Earth. Its day and night cycle is about the same as ours. A year on Mars is almost twice as long as on earth (687 days as opposed to our 365-day year.) Its atmosphere is very thin. Mars has two small moons. The big question, "Is there life on Mars?" has yet to be answered. There may be some forms of lichen or microscopic organisms.

The Moon is Earth's natural satellite. We can see the moon from Earth; we can see mountains, valleys, and craters. But we see only one side of the moon. It makes one rotation on its axis while it revolves around Earth, but the same side always faces us and the only time we have been able to view the back side of the moon was when astronaut, Buzz Aldrin, and his companions photographed it during an orbit. A moon day lasts 14 of our days, and nights are equally as long. Days are much hotter and nights are far colder than ours. The moon lacks atmosphere.

Earth experiences the "greenhouse effect". Sunlight (radiant energy) penetrates through the atmosphere of the Earth much like the glass of a greenhouse. Much radiant heat from the sun is "trapped" and changed into heat. Since Earth's heat is trapped within our atmosphere and is not lost by being radiated off into space, Earth is just right for living things. It is called the "Green Planet", the "perfect planet" and the most important in the solar system because climatic and seasonal conditions have permitted life.

Mercury, the planet nearest the sun, rotates once on its axis every 59 days and revolves around the sun in about 88 days. It has almost no atmosphere. Days are very hot; nights are very cold. Too hot and too cold for life as we know it.

Venus, like Mars, is an inner planet neighbor. It has also been studied by spacecraft from Earth. Venus rotates once on its axis in about 243 earth days and revolves around the sun about every 225 earth days. Its cycle of day and night is longer than its year. It has a thick atmosphere mostly of carbon dioxide gas and may have a small amount of water. Temperature is about 600 degrees, far too hot for life as we understand it.

Jupiter's diameter is ten times that of Earth. Some scientists believe it is composed of gas and not solid rock like Earth and the Moon. It rotates in about ten hours and revolves around the sun in about twelve years. Jupiter has no water, no oxygen and probably no life. It has twelve moons.

Saturn is beautiful through a telescope. Its rings set it apart from the other planets. Saturn rotates every ten hours and revolves around the sun every 29 years. Like Jupiter, its atmosphere is poisonous gases There is no water, no air. It is extremely cold and has twelve moons.

Uranus rotates in eleven hours. It revolves in about 84 years. It has five moons, is colder than Saturn, has a poisonous gaseous atmosphere and no life.

Neptune rotates every sixteen hours and revolves every 165 yea It has two moons and a poisonous atmosphere. It is colder than Uranus.

Pluto is about the size of Mercury. It is the coldest and farthest planet from the sun. It revolves every 248 years and not much more is known about Pluto.

Earth receives the sun's radiant energy. Warmer areas are near the equator and colder areas are around the poles. On or near the equator the sun's rays are fairly direct. Further from the equator the rays hit the earth in an oblique angled fashion.

Demonstration:

Materials: flashlight, cardboard

Tilt cardboard at various angles catching rays from flashlight. Point out that equatorial areas receive more direct rays. Northern and southern areas receive more oblique rays.

Instruction and Practice

What kind of place do you think Mercury is? What about the kind of plants and animals as we know them? Why is Mercury so hot? Would you like to land there on a spaceship? Why? If Mercury were not so near the sun would it be hotter or not so hot? Where would we go to visit a cold planet?

Look at the picture of Pluto and describe it. Would a trip to Pluto be a longer trip than to Mercury? Can you see the sun in this picture? Could anything that needs water live on Pluto?

We need to remember the names of the planets and we also need to learn to spell them. Do you remember the key sentence that reminds us of the order of the planets? We begin with the ones closest to the sun and end with the one farthest from it. (Distribute large print and braille lists.)

Read about the planet on page 48. Do you think it has too much or too little of something? Do you think this planet is more attractive than Mercury or Pluto? What are some of the things mentioned as not being on Mercury or Pluto? (Water, air, living things. Keep the identity of the planet - Earth - a mystery.)

Now read the first paragraph on page 49. How do you know that the sun warms things on Earth? What do you know about cloud formation? (Discuss evaporation. Write on board, all planets and their satellites receive energy from the sun. Use worksheet. See Illustration I.)

Demonstration: Rotation of the Planet Earth

Do you remember when we studied the model of the Earth (globe)? We located many places including the equator and the polar regions. Who can tell us what the flag represented? Yes, our school in Macon, Georgia. Tony, would you hold the globe and Joey, would you switch on the lamp? Let us slowly rotate the globe on its axis from west to east until the flag is no longer illuminated by the lamp. Now what happened to our school? It seems to be in the dark. Let's read on page 55. Who will describe the pictures...The main idea is that sunlight is radiant energy from the sun. This energy becomes heat and warms the Earth. That is the greenhouse effect we discussed earlier. The Earth is the most perfect planet in our solar system; as it rotates just a little heat is lost because the atmosphere traps the heat just like the plastic bag trapped heat in our experiment. See Illustration II.

We need to refer to an interesting illustration of Earth and Mars in orbit around the Sun. Please turn to page 68. Note Illustration III. Which orbit would require more string? Why? Which planet takes longer to revolve around the Sun? Which planet requires more time for one revolution?

Why does Mars get so cold at night? (The atmosphere is too thin to trap much heat at night.) Does Earth lose as much heat as Mars does at night? Why not? (Due to atmospheric conditions,Earth traps more heat by day and keeps more at night. However, it does lose heat at night. For example, California often has a daytime temperature of 80° and a nighttime temperature of 50°. Temperature on Mars drops from very warm during the day to far below zero at night.

Demonstration: Orbital Paths of Earth and of Mars

A lamp on the floor represents the Sun. A 93-inch string is labeled Earth and is attached to the lamp. A 141-inch string labeled Mars is attached to the lamp. A student moves Earth's orbital trip around the Sun in a counterclockwise motion around lamp. Another child does the same for Mars. Paths are slightly elliptical.

Conclusion

The Earth revolves once around the Sun while rotating on its axis while Mars completes half a revolution.

Similar demonstrations may be continued as each planet is included in the model. The string for Mercury should be 36 inches in length and Venus, 67 inches. Demonstrate the orbital motions for the inner planets.

The demonstration for the outer planets must be transferred to the school yard. Jupiter's string is 13½ yards long; Saturn's string is 25 yards long; Uranus' string is 78 yards long; Neptune - 90 yards; and Pluto - 100 yards.

The diameter of the Sun would be 2 cm. less than one inch. Earth's diameter is just a pinpoint, 1/10 of an inch.

Another method of demonstrating the movement of the solar system is to allow the students to be the model in a role-playing situation. One child would be the Sun; the other students should take turns being the inner and outer planets rotating in orbit while revolving on an axis around the Sun.

In this manner the children should be able to grasp the concepts presented in this unit. They should be able to analyze the information they have gathered, contrast the conditions found upon the various planets and synthesize the knowledge gained in their study of the solar system.

Further, the children may gather special information during periods in the library. They may be challenged to do research on selected topics such as information about Jupiter as a result of the Pioneer 10 Space Probe.

The children should be able to complete the worksheet by writing answers in their science notebooks. They also should write the terms introduced in the beginning of this unit and write the definitions from the glossary of the textbook. A twenty-five question objective test completes the formal evaluation.

Illustration I

WORKSHEET

1. How many planets go around the Sun?
2. Which planet makes the longest trip around the Sun?
3. Why do we say the planet Earth is the right distance from the Sun?
4. Why is Mercury so hot?
5. How does the Sun look from Pluto? Why?
6. Name the inner planets.
7. Name the outer planets.
8. In what three ways are all the planets alike? (Spherical, rotating and revolving around the Sun, receiving energy from the Sun)
9. Which planets get more of the Sun's energy than Earth? Why?
10. The Earth's atmosphere helps keep the Earth ____________________.

    a. warm b. dry

11. Which planets get energy from the Sun?
12. Which planet has many different kinds of animals?

Illustration II

Sunlight on the Earth

We have day when the Sun shines on our side of the Earth. When our side has day, the other side has night. Look at this picture. Is it day or night where you live?

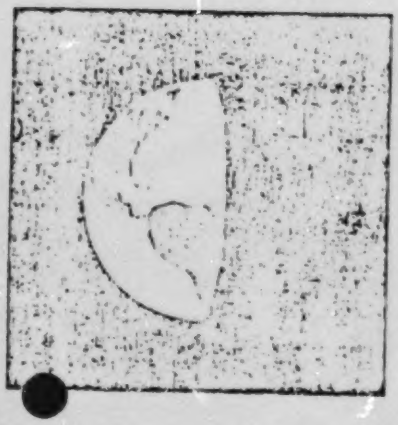
As the Earth turns, we move away from sunlight. We move into the shadow. In this picture, is it day or night where you live?

When our side of the Earth has night, the other side of the Earth has day. Is where you live in daylight or in darkness now?

What happens on the night side? Do things warm up or cool off? Things cool off, of course, when we are out of the Sun's rays. Only a little heat leaks away into space. Most of the heat is trapped by our atmosphere. If it were not the Earth would be a cold place indeed.

Sunlight is light energy from the Sun. It lights half the Earth at a time. But that is not all. This energy becomes heat and warms the Earth. This energy warms you.

Most of the light and heat on our planet are from the Sun.



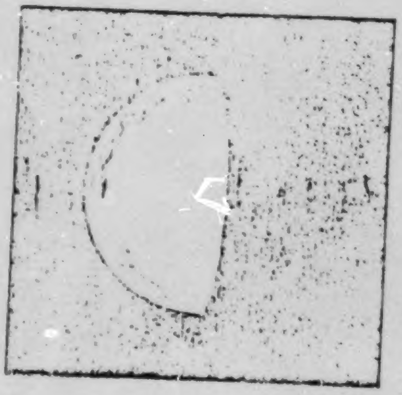


Illustration III

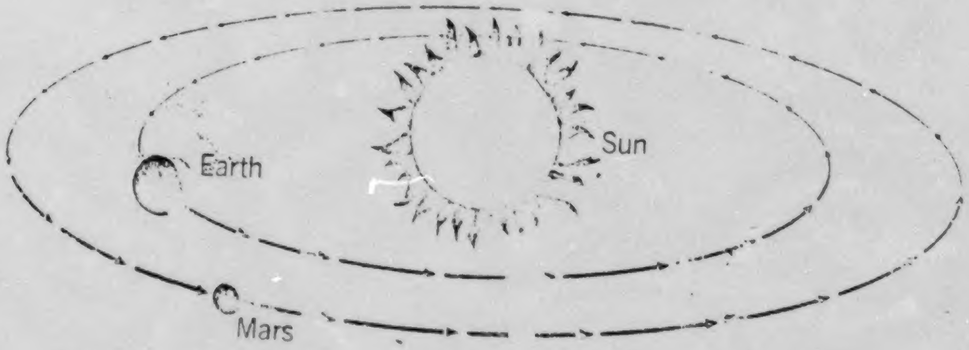
Revolving and Rotating

Mars and Earth revolve in their orbits around the Sun. It takes Earth a year to travel once around. It takes Mars almost two years to make the same trip.

Earth rotates once in about 24 hours. So does Mars. On Mars, a day and night are only about a half hour longer than they are on Earth.

In some ways a day on Mars is like a day on Earth. The Sun shines and warms the land. At the Mars equator, it may become about as warm as a spring day on Earth. Mars is farther from the Sun than Earth is. So Mars gets much less energy from the Sun.

At night on Mars, the land quickly loses heat. The atmosphere of Mars is much thinner than the atmosphere of Earth. In the thinner atmosphere, less heat is trapped and held. Mars nights are colder than the coldest nights on Earth.



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Evaluation

Match Term to Definition:

___1. satellite

___2. orbit

___3. Planet

___4. rotate

___5. theory

___6. revolve

a. path of a body in space around another body

b. a body in space that revolves around the Sun

c. a smaller body that revolves around another body in space

d. to spin or turn

e. to travel in a path around another object

f. a reasonable explanation fitting facts

True-False:

___7. Nine planets revolve around the Sun.

___8. All planets receive energy from the Sun.

___9. Earth gets the right amount of energy from the Sun and is the correct distance from it to sustain life.

___10. Earth is the only planet which rotates on its axis.

___11. A star makes its own light.

Multiple Choice:

___12. The Earth's twin is

a. Venus b. Mars

___13. The most important star in the solar system is

a. pole b. Sun

___14. The earth's atmosphere traps

a. light b. heat

___15. The coldest planet is

a. Saturn b. Pluto

___16. The planet just right for plants and animals is

a. Earth b. Venus

__17. A body that gives off heat is

a. planet b. star

__18. Planets in the solar system receive their energy from

a. the Moon b. the Sun

__19. The planet making the longest trip around the Sun is

a. Pluto b. Neptune

__20. The most important planet in the solar system is

a. Jupiter b. Earth

__21. The planet closest to the Sun is

a. Venus b. Mercury

__22. The planet farthest from the Sun is

a. Uranus b. Pluto

__23. This body is a satellite of Earth

a. Moon b. Sun

__24. The "red" planet is

a. Mars b. Venus

__25. The layer of air around Earth is

a. Equator b. atmosphere

Generalization and Transfer

As a result of our study about the solar system, I am certain that we should be able to enjoy our field trip to the planetarium at the Museum of Arts and Sciences. The telescope there is the largest one in Middle Georgia and it enables man to explore space, seeing much more than is visible to the naked eye.

Also because of newly acquired knowledge about our solar system you can understand news about space much more clearly and you have a deeper appreciation for Earth, our home planet.

You surely like Tang, a product which was developed just for use in space travel. The pacemakers which allow heart patients to enjoy life more fully is another item developed for use in space which man on Earth now can use to advantage.

Meterologists are able to predict our weather more accurately as a result of technology of satellite photography. Scientists can learn more about the inner core of Earth as a result of studying meteorites which have fallen to Earth. The list could go on and on.

Anyway, space is the new frontier; and who knows what man will accidentally bump into out there? We simply know that our Earth is the most wonderful planet of all and surely there is a sister planet there in another galaxy. There are others perhaps not too different from us. Someday the pieces of the greatest puzzle of all may fall into place. When? Where? What? Who? How? Wherefore? Just keep the faith!

CHAPTER TEN

THE SOCIAL STUDIES DOMAIN

Broad Skills, Enabling Skills
Specific Skills, and Record Sheet
Social Studies Domain

Table 10-1

Social Studies Domain

Level	Pre-Test	Post-Test		Our Environment on Earth
4	____	____	4.1.1.	Identify earth's physical characteristics
	____	____	4.1.2.	Earth's location in solar system and universe
	____	____	4.1.3.	Locate sites on world map
	____	____	4.1.4.	Sun's effect on earth
	____	____	4.1.5.	Role of plants on earth
	____	____	4.1.6.	Role of animals on earth
	____	____	4.1.7.	Role of man on earth
	____	____	4.1.8.	Define ecosystem
	____	____	4.1.9.	Operation of an ecosystem
	____	____	4.1.10.	Formation of ecosystems
	____	____	4.1.11.	Directions on globe
				Biomes of North America
	____	____	4.2.1.	Major biomes of North America
	____	____	4.2.2.	Forest as a biome
	____	____	4.2.3.	Grasslands as a biome
	____	____	4.2.4.	Desert as a biome
	____	____	4.2.5.	Tundra as a biome

Level	Pre-Test	Post-Test	Biomes of North America
4	____	____	4.2.6. Shore as a biome
	____	____	4.2.7. Location of major North American biomes
	____	____	4.2.8. Kinds of farming in the U.S.
	____	____	4.2.9. Rainfall in sections of the U.S.
	____	____	4.2.10. Areas of U.S. requiring irrigation
	____	____	4.2.11. Effects of climate on people
	____	____	4.2.12. Time zones of the U.S.
			Man's Adaptation to his Environment
	____	____	4.3.1. Man's early adaptations on earth
	____	____	4.3.2. Man's early adaptations in North America
	____	____	4.3.3. American Indians' adaptations
	____	____	4.3.4. Life of the Plains Indians
	____	____	4.3.5. Life of the Northeast Coast Indians
	____	____	4.3.6. Life of the early settlers in America
	____	____	4.3.7. Contrast life in the old and new worlds
	____	____	4.3.8. How man changes his environment
	____	____	4.3.9. How man uses the land
	____	____	4.3.10. Life in the city and country
	____	____	4.3.11. Balancing an ecosystem

Level	Pre-Test	Post-Test	Man's Adaptation to his Environment
4	____	____	4.3.12. Define extinction
	____	____	4.3.13. Life at the equator in South America
			Environmental Decision-makers
	____	____	4.4.1. Name environmental decision-makers
	____	____	4.4.2. How individuals make environmental decisions
	____	____	4.4.3. How families make environmental decisions
	____	____	4.4.4. How neighborhoods make environmental decisions
	____	____	4.4.5. Kinds of environmental decisions made by city governments
	____	____	4.4.6. Kinds of environmental decisions made by state governments
	____	____	4.4.7. Kinds of decisions made by federal government concerning the environment
	____	____	4.4.8. Path of a pesticide through the food chain
	____	____	4.4.9. Advantages and disadvantages of pesticides
	____	____	4.4.10. Advantages and disadvantages of oil
	____	____	4.4.11. Reasons for noise pollution
	____	____	4.4.12. Effects of noise pollution

Level	Pre-Test	Post-Test	Environmental Decision-makers
4	____	____	4.4.13. Define noise pollution
	____	____	4.4.14. Define air pollution
	____	____	4.4.15. Causes of air pollution
	____	____	4.4.16. Environmental problems in the U.S.
	____	____	4.4.17. Antarctica's location on a globe
	____	____	4.4.18. Characteristics of Antarctica
			How Man Learns
	____	____	4.5.1. Learnings and adaptations of man
	____	____	4.5.2. Man's cultural adaptations
	____	____	4.5.3. Dependency of human infants compared to other animals
	____	____	4.5.4. Functions of reflexes and instinct
	____	____	4.5.5. Contrast reflexes, instincts, and learned behavior
	____	____	4.5.6. Effect of environment on learned behavior
	____	____	4.5.7. Compare learned behavior of man and other animals
	____	____	4.5.8. Name and describe man's reflexes
	____	____	4.5.9. Compare physical adaptations of man and other animals
	____	____	4.5.10. Contrast the adaptations of the three major races of man
	____	____	4.5.11. Australia's location on a globe
	____	____	4.5.12. Characteristics of Australia and its people

Level	Pre-Test	Post-Test	Man's Role in the Changing Environment	
4	____	____	4.6.1.	Phenomena and entities man can change
	____	____	4.6.2.	Phenomena and entities man cannot change
	____	____	4.6.3.	Distinction between inherited traits and learned behavior
	____	____	4.6.4.	Conservationist's pledge
	____	____	4.6.5.	America's major natural resources
	____	____	4.6.6.	Special care for natural resources
	____	____	4.6.7.	Define conservationist
	____	____	4.6.8.	Work of the conservationist
	____	____	4.6.9.	Location of Japan on a globe
	____	____	4.6.10.	Characteristics of Japan and its people
	____	____	4.6.11.	American change agents in the area of the handicapped
				Founders of a New Nation
	____	____	4.7.1.	Contribution of Christopher Columbus
	____	____	4.7.2.	Contribution of Captain John Smith
	____	____	4.7.3.	Contribution of Miles Standish and the Pilgrims
	____	____	4.7.4.	Contributions of Benjamin Franklin
	____	____	4.7.5.	Contribution of Samuel Adams
	____	____	4.7.6.	Contributions of George Washington

Level	Pre-Test	Post-Test		Founders of a New Nation
4	___	___	4.7.7.	Contribution of Alexander Hamilton
	___	___	4.7.8.	Contributions of Thomas Jefferson
	___	___	4.7.9.	Contribution of Daniel Boone
	___	___	4.7.10.	Contributions of Andrew Jackson
	___	___	4.7.11.	Contribution of Lewis and Clark
				Famous People in the Civil War
	___	___	4.8.1.	Contribution of Abraham Lincoln
	___	___	4.8.2.	Contribution of Robert E. Lee
	___	___	4.8.3.	Contributions of Clay, Webster, and Calhoun
	___	___	4.8.4.	Contribution of Ulysses S. Grant
	___	___	4.8.5.	Contribution of Clara Barton
	___	___	4.8.6.	Contribution of Jefferson Davis
				Inventors Who Helped America
	___	___	4.9.1.	Contributions of Thomas Edison
	___	___	4.9.2.	Contribution of Alexander Graham Bell
	___	___	4.9.3.	Contribution of Wilbur and Orville Wright
	___	___	4.9.4.	Contribution of Henry Ford
	___	___	4.9.5.	Contribution of Lee de Forest
	___	___	4.9.6.	Contributions of George Washington Carver

Level	Pre-Test	Post-Test		Inventors Who Helped America
4	____	____	4.9.7.	Contribution of Enrico Fermi
				Americans and World Leadership
	____	____	4.10.1.	Contributions of Theodore Roosevelt
	____	____	4.10.2.	Contribution of Woodrow Wilson
	____	____	4.10.3.	Contribution of Franklin D. Roosevelt
	____	____	4.10.4.	Contribution of Dwight D. Eisenhower
	____	____	4.10.5.	Contribution of John F. Kennedy
	____	____	4.10.6.	Name the current President of the United States

Level	Pre-Test	Post-Test		Man, the Master of Change
5	____	____	5.1.1.	Compare and contrast the degree of change in early and modern man
	____	____	5.1.2.	Early man's major changes
	____	____	5.1.3.	How man changes his environment
	____	____	5.1.4.	The evolutionary constant
	____	____	5.1.5.	Define scientific method
	____	____	5.1.6.	Life of early man
	____	____	5.1.7.	Darwin's conclusions about the origin of the species
	____	____	5.1.8.	Darwin's data collection process

Level	Pre-Test	Post-Test		Man, the Master of Change
5	____	____	5.1.9.	Define survival of the fittest
	____	____	5.1.10.	Define selection
	____	____	5.1.11.	Define adaptation
	____	____	5.1.12.	Darwin's ship
	____	____	5.1.13.	Contribution of Mendel
				The Human Revolution
	____	____	5.2.1.	Adaptations of early humanoids
	____	____	5.2.2.	Role of inherited characteristics in the development of man
	____	____	5.2.3.	Define division of labor
	____	____	5.2.4.	Division of labor among early hunting and food gathering societies
	____	____	5.2.5.	Innate and learned behavior of early hunting and food gathering societies
	____	____	5.2.6.	Effects of the Ice Age on man's development
	____	____	5.2.7.	Define perception
	____	____	5.2.8.	Define technology
	____	____	5.2.9.	Examples of technology
	____	____	5.2.10.	Practical advantages implicit in new technology
	____	____	5.2.11.	Define capital
	____	____	5.2.12.	Examples of capital

Level	Pre-Test	Post-Test	The Human Revolution
5	____	____	5.2.13. Factors influencing the rate of change in a culture
	____	____	5.2.14. Attitudes of man during the Ice Age
			The Agricultural Revolution
	____	____	5.3.1. Location of each continent, ocean, and mountain range on a globe
	____	____	5.3.2. Location of International Dateline and significance
	____	____	5.3.3. Seasons of the year and climate associated with each
	____	____	5.3.4. Define agricultural revolution
	____	____	5.3.5. Technological innovations of the agricultural revolution
	____	____	5.3.6. Seeds that we eat
	____	____	5.3.7. Oldest agricultural village and its age
	____	____	5.3.8. Adaptations of the nomadic Lapps
	____	____	5.3.9. Changing plants through selection
	____	____	5.3.10. Effects of cereal growing on human life
	____	____	5.3.11. Factors which speeded the spread of agriculture around the world
			Colonies in the New Land
	____	____	5.4.1. Name and date of the first new world colony

Level	Pre-Test	Post-Test		Colonies in the New Land
5	____	____	5.4.2.	Company formed to establish colonies in the new world
	____	____	5.4.3.	Define plantation
	____	____	5.4.4.	Reason early plantations were started along the James River
	____	____	5.4.5.	First important money crop of the early plantations
	____	____	5.4.6.	Define money crop
	____	____	5.4.7.	When and why Negroes were brought to the new world as slaves
	____	____	5.4.8.	Events in Virginia in 1619
	____	____	5.4.9.	Define puritan
	____	____	5.4.10.	Importance of the Mayflower Compact
	____	____	5.4.11.	Location of the Pilgrim settlement on a map
	____	____	5.4.12.	Reasons the Pilgrims came to the new world
	____	____	5.4.13.	Name the original 13 colonies
	____	____	5.4.14.	Nationalities of settlers of the original 13 colonies
	____	____	5.4.15.	How youths decided their work
	____	____	5.4.16.	Year the English took over basic control of the east coast of the new world
				Birth of a New Nation
	____	____	5.5.1.	Reasons colonists became discontented with English rule

Level	Pre-Test	Post-Test	Birth of a New Nation
5	____	____	5.5.2. Describe events surrounding the Boston Tea Party
	____	____	5.5.3. Describe events surrounding the battle at Fort Ticonderoga
	____	____	5.5.4. Name person chosen to train colonial troops
	____	____	5.5.5. Major purpose of the rebellion according to the colonists
	____	____	5.5.6. Document signed on July 4, 1776 and man most responsible for writing it
	____	____	5.5.7. Contribution of Thomas Paine
	____	____	5.5.8. Name of the rebellion which led to American independence
	____	____	5.5.9. Contributions of John Paul Jones, George Rogers Clark, and Nathan Hale
	____	____	5.5.10. Name the British General who surrendered at Yorktown
	____	____	5.5.11. Date of peace treaty which ended the Revolutionary War
	____	____	5.5.12. Four main boundaries of the United States following the Revolutionary War
	____	____	5.5.13. Man who wrote the plan of government presented to the Constitutional Convention in Philadelphia
	____	____	5.5.14. Man responsible for obtaining cooperation among participants at the Constitutional Convention
	____	____	5.5.15. Recite the "Bill of Rights"

Level	Pre-Test	Post-Test	Birth of a New Nation
	____	____	5.5.16. Two main parts of the United States Congress
	____	____	5.5.17. Commander of the armed forces of the United States
	____	____	5.5.18. Three branches of government in the United States
	____	____	5.5.19. Highest authority in the judiciary
	____	____	5.5.20. First four Presidents of the United States
	____	____	5.5.21. First Secretary of the Treasury and cabinet member
	____	____	5.5.22. Nations involved in the War of 1812
	____	____	5.5.23. President whose administration completed the Louisiana Purchase
	____	____	5.5.24. Person who wrote the "Star Spangled Banner"
5	____	____	5.5.25. First state west of the Appalachian Mountains
	____	____	5.5.26. How Florida was obtained by the United States
	____	____	5.5.27. Indian girl who led Lewis and Clark
	____	____	5.5.28. Mountain named for Zebulon Pike
	____	____	5.5.29. Significance of "Remember the Alamo"
	____	____	5.5.30. People killed at the Alamo
	____	____	5.5.31. Only state which was a nation

Level	Pre-Test	Post-Test	Birth of a New Nation	
5	____	____	5.5.32.	How California area was obtained by the United States
			New Nation Tested	
	____	____	5.6.1.	Reasons settlers went to California
	____	____	5.6.2.	How Oregon was obtained by the United States
	____	____	5.6.3.	Place and date gold was discovered in California
	____	____	5.6.4.	Name states in the Oregon Territory
	____	____	5.6.5.	Lifestyles in the North and South before the Civil War
	____	____	5.6.6.	Reason the Civil War occurred
	____	____	5.6.7.	Main outcome of the Missouri Compromise
	____	____	5.6.8.	Year Abraham Lincoln was inaugurated
	____	____	5.6.9.	Southern states which seceded and nation they formed
	____	____	5.6.10.	Who started the Civil War and location
	____	____	5.6.11.	Name three union and three confederate generals
	____	____	5.6.12.	Document which freed the slaves and man who wrote it
	____	____	5.6.13.	Year the Civil War ended

Level	Pre-Test	Post-Test		New Nation Tested
5	____	____	5.6.14.	How Lincoln died
	____	____	5.6.15.	Why many men moved west after the Civil War
	____	____	5.6.16.	How long union troops stayed in the South following the Civil War
	____	____	5.6.17.	Purpose of the "Underground Railroad"
				A Time for Change
	____	____	5.7.1.	Importance of railroads in 1884
	____	____	5.7.2.	Why immigrants came to America after the Civil War
	____	____	5.7.3.	Reason America increased trade with other nations after the Civil War
	____	____	5.7.4.	Six new possessions obtained by the United States after the Civil and Spanish American Wars
	____	____	5.7.5.	When Panama Canal was completed and why it is important
	____	____	5.7.6.	Importance of the Pan American Union
	____	____	5.7.7.	When United States entered World War I and the side on which it fought
	____	____	5.7.8.	Main countries among the Allies and Axis powers of World War I
	____	____	5.7.9.	American general who commanded troops during World War I in France

Level	Pre-Test	Post-Test	A Time for Change	
5	____	____	5.7.10.	Year World War I ended and treaty which ended the war
	____	____	5.7.11.	Role of the United States in World War I
	____	____	5.7.12.	Important changes in America during the 1920s
	____	____	5.7.13.	Life style in America during the 1930s
	____	____	5.7.14.	Names of opponents during World War II
	____	____	5.7.15.	Countries that fought each other in World War II
	____	____	5.7.16.	Major event which ended war with Japan
	____	____	5.7.17.	Year United Nations was formed and its purpose
	____	____	5.7.18.	Reason United Nations sent troops to Korea
	____	____	5.7.19.	Two Presidents who served during the Second World War
	____	____	5.7.20.	Name last seven Presidents of the United States
			Our Country Today	
	____	____	5.8.1.	Distinguishing features of the U.S.
	____	____	5.8.2.	Geographic regions of the U S.
	____	____	5.8.3.	Distinctive features of United States' geographic regions

Level	Pre-Test	Post-Test		Our Country Today
5	______	______	5.8.4.	Development of communication systems in the United States
	______	______	5.8.5.	Inventions that aided the development of the United States
	______	______	5.8.6.	How inventions helped the United States
				Urban Revolution
	______	______	5.9.1.	"Cradle of civilization"
	______	______	5.9.2.	Why individuals live together and form communities
	______	______	5.9.3.	Define gregarious
	______	______	5.9.4.	Why communities lead to political systems and government
	______	______	5.9.5.	How technology has led to the division of labor and social classes
	______	______	5.9.6.	Reason technology leads to urbanization
	______	______	5.9.7.	Reason urban empires change little once established
				Industrial Revolution
	______	______	5.10.1.	Reason Roman Empire declined
	______	______	5.10.2.	How quality of life changes with increased production, wealth and trade
	______	______	5.10.3.	Innovations which led to the industrial revolution
	______	______	5.10.4.	Social Problems caused by rapid industrialization
	______	______	5.10.5.	Solutions to social problems caused by industrialization

Level	Pre-Test	Post-Test		Industrial Revolution
5	______	______	5.10.6.	Contrast life styles in industrialized and nonindustrialized countries
	______	______	5.10.7.	Define new imperialism
	______	______	5.10.8.	Major problems faced by nonindustrialized nations
				Tilling the Soil
6	______	______	6.1.1.	Compare and contrast European environments
	______	______	6.1.2.	How population affects environment
	______	______	6.1.3.	How Europeans have changed their environment
	______	______	6.1.4.	How farming spread in Europe
	______	______	6.1.5.	How farming and population growth are related
	______	______	6.1.6.	Use of olive oil in the Mediterranean area
	______	______	6.1.7.	Attitude of wealthy Romans toward poor Romans
	______	______	6.1.8.	Explain the manor system
	______	______	6.1.9.	Relationship between lords and serfs
	______	______	6.1.10.	Describe the life and problems of peasants in the 12th and 13th centuries
	______	______	6.1.11.	Describe the new farming techniques which came into practice in the Middle Ages
	______	______	6.1.12	Identify the factors that led to the settlement of eastern Europe

Level	Pre-Test	Post-Test		Patterns of Trade
6	____	____	6.2.1.	Classify exports and imports of ancient Athens
	____	____	6.2.2.	Name crafts practiced by ancient Athenians
	____	____	6.2.3.	Describe luxuries avaliable to the Romans
	____	____	6.2.4.	Relationship between Roman seapower and Roman lifestyle
	____	____	6.2.5.	Effects of changing from raiding to trading on Greece
	____	____	6.2.6.	Events and purposes of medieval fair
	____	____	6.2.7.	Influence of Moslems on European trade
	____	____	6.2.8.	Describe the Crusades
	____	____	6.2.9.	Describe life in a medieval town
	____	____	6.2.10.	Purpose of the Hanseatic League
	____	____	6.2.11.	Describe life of a medieval merchant
				Shaping European Society
	____	____	6.3.1.	Solon's reforms of government
	____	____	6.3.2.	Describe the olympic games
	____	____	6.3.3.	Categorize ideas as the thoughts of Socrates, Plato, or Aristotle
	____	____	6.3.4.	Describe the fall of the Greek city states

Level	Pre-Test	Post-Test		Shaping European Society
6	____	____	6.3.5.	Name ways Romans improved the lands they conquered
	____	____	6.3.6.	Define the terms, patrician and plebian
	____	____	6.3.7.	Describe Caesar's death
	____	____	6.3.8.	Causes of the fall of the Roman Empire
	____	____	6.3.9.	Define the term, feudalism
	____	____	6.3.10.	Describe the conflict between the Roman rulers and the early Christians
	____	____	6.3.11.	Achievements of William, the Conqueror
	____	____	6.3.12.	Define the term, guild
	____	____	6.3.13.	Distinctive features of a Gothic cathedral
	____	____	6.3.14.	Compare and contrast Greek, Roman, Gothic, and modern architecture
				New Times and New Ideas
	____	____	6.4.1.	Define the term, Renaissance
	____	____	6.4.2.	Importance of Lorenzo De'Medici
	____	____	6.4.3.	Achievements of Michaelangelo
	____	____	6.4.4.	Homes of the wealthy during the Renaissance.
	____	____	6.4.5.	Conditions that led to the Reformation
			6.4.6.	Martin Luther's views

Level	Pre-Test	Post-Test		New Times and New Ideas
6	____	____	6.4.7.	Split between the Catholics and Protestants and its effect in Europe
	____	____	6.4.8.	Impact of the printing press on European life
	____	____	6.4.9.	Five important discoveries during the Scientific Revolution
	____	____	6.4.10.	Influence of Voltaire
				People and Nations
	____	____	6.5.1.	Define the term, feudalism
	____	____	6.5.2.	Define the term, dynasty
	____	____	6.5.3.	Spanish Inquisition and why it occurred
	____	____	6.5.4.	Define th terms, sovereignty and absolution
	____	____	6.5.5.	Main events of King Henry XIV's reign
	____	____	6.5.6.	Importance of the Magna Carta, Petition of Rights, and Bill of Rights
	____	____	6.5.7.	Conditions of the poor in 17th century Europe
	____	____	6.5.8.	Events of the French Revolution
	____	____	6.5.9.	Conservative, liberal, and radical views toward change
	____	____	6.5.10.	Events of the unification of Germany
				Workers and Money
	____	____	6.6.1.	Define the term, capitalism
	____	____	6.6.2.	Promotion of capitalism through discoveries

Level	Pre-Test	Post-Test		Workers and Money
6	____	____	6.6.3.	Influence of the Industrial Revolution on children
	____	____	6.6.4.	Reforms and reformers of the Industrial Revolution
	____	____	6.6.5.	Values of Karl Marx
	____	____	6.6.6.	Contributions of Europeans and problems they created for colonists
	____	____	6.6.7.	Causes of the colonial rebellion against European Imperialism
				Twentieth Century Conflict
	____	____	6.7.1.	Immediate and long term causes of World War I
	____	____	6.7.2.	Terms of the Treaty of Versailles
	____	____	6.7.3.	Define the term, totalitarianism
	____	____	6.7.4.	Philosophy of Stalin
	____	____	6.7.5.	Compare and contrast fascism, communism, nazism, and absolutism
	____	____	6.7.6.	Conditions which lead to dictatorships
	____	____	6.7.7.	Philosophy of Hitler
	____	____	6.7.8.	Concentration camps of World War II
	____	____	6.7.9.	Describe the Marshall Plan
	____	____	6.7.10.	Nations' leaders in World War II
	____	____	6.7.11.	Objectives of the Common Market
	____	____	6.7.12.	the "Cold War"

Level	Pre-Test	Post-Test		Twentieth Century Conflict
6	____	____	6.7.13.	Obstacles to European unity
	____	____	6.7.14.	Economic changes in modern Europe
	____	____	6.7.15.	Objectives of NATO and meaning of N-A-T-O

Level	Pre-Test	Post-Test		Forefathers and Founders
7	____	____	7.1.1.	Groups who became the early American settlers
	____	____	7.1.2.	Chief motives for colonizing America
	____	____	7.1.3.	Two main kinds of English colonials
	____	____	7.1.4.	Why slavery became common in America
	____	____	7.1.5.	Importance of Jean de Crevecoeur
	____	____	7.1.6.	Provisions of the Articles of Confederation
	____	____	7.1.7.	Define the term, indentured servant
	____	____	7.1.8.	Major weakness of the Articles of Confederation
	____	____	7.1.9.	Major political parties in America and meaning of political party
	____	____	7.1.10.	How political parties originated in America
	____	____	7.1.11.	Define the term, caucus system
	____	____	7.1.12.	Criteria for voter registration
	____	____	7.1.13.	Define the term, inauguration

Level	Pre-Test	Post-Test		Founders and Forefathers
7	____	____	7.1.14.	Define the term, election
	____	____	7.1.15.	Function of nominating conventions
	____	____	7.1.16.	Describe three political party campaign tactics
	____	____	7.1.17.	Role of third parties in the United States
	____	____	7.1.18.	Importance of John D. Rockefeller and the Standard Oil Company in American history
	____	____	7.1.19.	Role of Andrew Carnegie in American history
				The Reform Movement
	____	____	7.2.1.	Origin of labor unions in America
	____	____	7.2.2.	Origin of farmer organization in America
	____	____	7.2.3.	The "Progressive Era"
	____	____	7.2.4.	Define the term, consumer advocacy
	____	____	7.2.5.	Women's rights in the twentieth century
	____	____	7.2.6.	Purpose and function of social security in America
	____	____	7.2.7.	Purpose and function of the juvenile court system in America
				America as a World Power
	____	____	7.3.1.	How America became a world power

Level	Pre-Test	Post-Test		America as a World Power
7	____	____	7.3.2.	America as a moral leader
	____	____	7.3.3.	America's noninvolvement in world conflicts
	____	____	7.3.4.	United States' role in development of the League of Nations and the United Nations
	____	____	7.3.5.	United States' role in World War II
				Race, Poverty, and Youth
	____	____	7.4.1.	Prejudice in America
	____	____	7.4.2.	Successes of the black rights movement
	____	____	7.4.3.	Desegregation of the schools
	____	____	7.4.4.	Urban riots in America
	____	____	7.4.5.	The drive for voter registration in America
	____	____	7.4.6.	Contributions of Martin Luther King, Jr.
	____	____	7.4.7.	Blacks' use of nonviolence, legal action, and education to achieve rights
	____	____	7.4.8.	Define the term, ghetto
	____	____	7.4.9.	How poverty affects everyone's life style
	____	____	7.4.10.	Problems of migrant workers in America
	____	____	7.4.11.	Problems of the elderly in America

Level	Pre-Test	Post-Test		Race, Poverty, and Youth
	____	____	7.4.12.	Problems of the American Indian
	____	____	7.4.13.	Problems of American youth
	____	____	7.4.14.	Problems of veterans in America
	____	____	7.4.15.	Problems of drug addiction in America
	____	____	7.4.16.	Compare and contrast the attitudes of adults and youth regarding problems in America
				Georgia History
	____	____	7.5.1.	Name Georgia counties
	____	____	7.5.2.	Branches of Georgia government and their functions
	____	____	7.5.3.	Capitol of Georgia
	____	____	7.5.4.	Important people in the history of Georgia and their contributions
	____	____	7.5.5.	Chief products of Georgia and main imports and exports
	____	____	7.5.6.	Name the Georgia symbols
	____	____	7.5.7.	Chief groups of people and places in Georgia
	____	____	7.5.8.	Name the largest institutions of higher education in Georgia

TAXONOMY OF GOALS AND OBJECTIVES

SOCIAL STUDIES DOMAIN

END GOAL: SKILLED SOCIAL STUDIES ACHIEVEMENT

4.0.0 Given a comprehensive examination which is objective and contains 50 items, the student will write responses with 70% accuracy.

LEVEL 4

TOPIC 1: OUR ENVIRONMENT ON EARTH

4.1.1. Given the question, "What does the earth look like," the student will orally produce at least six discriminative features of the earth's physical characteristics.

4.1.2. Given the task, the student will write earth's location in relation to the solar system and the universe with complete accuracy.

4.1.3. Given 25 specific locations on a map of the world, the student will point out each location with 95% accuracy.

4.1.4. When asked the question, "How does the sun affect the earth," the student will write at least five major ways in which the sun affects the earth.

4.1.5. When asked the question, "What is the role of plants on earth," the student will accurately describe how other life forms depend on plants for survival.

4.1.6. When asked the question, "What is the role of animals on earth," the student will accurately describe how other life forms depend on animals for survival.

4.1.7. When asked the question, "What is the role of man on earth," the student will accurately describe how all life forms on earth depend on man for survival.

4.1.8. Given the task, the student will define the term, ecosystem.

4.1.9. Given the task, the student will describe how an ecosystem operates.

4.1.10. Given the question, "How are ecosystems formed," the student will describe how ecosystems are formed with reasonable accuracy.

4.1.11. Given all major directions on a globe (e.g., southeast, east-northeast, west), the student will indicate each direction on a globe from any given location.

TOPIC 2: BIOMES OF NORTH AMERICA

4.2.1. Given the task, the student will name the major biomes of North America.

4.2.2. Given the task, the student will describe the forest as a biome.

4.2.3. Given the task, the student will describe the grasslands as a biome.

4.2.4. Given the task, the student will describe the desert as a biome.

4.2.5. Given the task, the student will describe the tundra as a biome.

4.2.6. Given the task, the student will describe the shore as a biome.

4.2.7. Given a map of North America, the student will point to the locations of the biomes of North America.

4.2.8. Given the task, the student will name the different kinds of farming conducted in the United States.

4.2.9. Given a map and several geographic locations, the student will write the annual amount of rainfall in each.

4.2.10. Given a map of North America, the student will mark those important areas which require irrigation for successful farming with 100% accuracy.

4.2.11. Given the question, "How does the climate affect people who live in various (identified) parts of the United States," the student will write at least four essential effects of the climate on its inhabitants for each location.

4.2.12. Given the task and a map of the United States, the student will draw in (with approximate accuracy) and name each time zone found in the United States.

TOPIC 3: MAN'S ADAPTATION TO HIS ENVIRONMENT

4.3.1. Given the task, the student will describe man's early life on earth and how he adapted to his environment.

4.3.2. Given the task, the student will describe man's early life in North America and how he adapted to his environment.

4.3.3. Given the task, the student will describe how the Indians of North America lived and adapted to their environment.

4.3.4. Given the task, the student will describe the life of the Plains Indians.

4.3.5. Given the task, the student will describe the life of the Northeast Coast Indians.

4.3.6. Given the task, the student will describe the life of the early settlers in the new world.

4.3.7. Given the task, the student will describe the differences between life in the new world and life in Europe at the same time.

4.3.8. Given the task, the student will describe how man has changed his environment to meet his needs and desires.

4.3.9. Given the task, the student will describe how man uses the land to meet his needs and desires.

4.3.10. Given the task, the student will describe important differences in life in the city and life in the country.

4.3.11. Given the task, the student will describe how an ecosystem is always moving toward a balance among its life forms and how this balance sometimes results in the end (extinction) of some life forms.

4.3.12. Given the task, the student will define the term, extinction

4.3.13. Given the task, the student will describe life along the equator in South America.

TOPIC 4: ENVIRONMENTAL DECISION-MAKERS

4.4.1. Given the task, the student will name six environmental decision-makers.

4.4.2. Given the task, the student will tell how individuals make decisions about the environment.

4.4.3. Given the task, the student will tell how families make decisions about the environment.

4.4.4. Given the task, the student will tell how neighborhoods make decisions about the environment.

4.4.5. Given the task, the student will describe the kinds of decisions that city governments make about the environment.

4.4.6. Given the task, the student will describe the kinds of decisions that state governments make about the environment.

4.4.7. Given the task, the student will describe the kinds of decisions that federal government makes about the environment.

4.4.8. Starting with the application of a pesticide on a food (e.g., apple), the student will describe the path of the pesticide through the food chain.

4.4.9. Given the task, the student will describe the advantages and disadvantages of using pesticides in our environment.

4.4.10. Given the task, the student will describe the advantages and disadvantages of using oil in our environment.

4.4.11. Given the task, the student will describe why there is noise pollution in some locations of our environment.

4.4.12. Given the task, the student will describe the effects of noise pollution in our environment.

4.4.13. Given the task, the student will define noise pollution.

4.4.14. Given the task, the student will define air pollution.

4.4.15. Given the task, the student will write five main causes of air pollution.

4.4.16. Given the task, the student will name seven environmental problems in the United States.

4.4.17. Given the task, the student will point to the location of Antarctica on a globe.

4.4.18. Given the task, the student will describe five major characteristics of Antarctica.

TOPIC 5: HOW MAN LEARNS

4.5.1. Given the task, the student will give seven examples of how man has adapted to his environment and describe the learning which had to take place for these adaptations to occur.

4.5.2. Given the task, the student will describe how man learns cultural adaptations.

4.5.3. Given the task, the student will compare the dependency of human infants with the infants of other living creatures.

4.5.4. Given the task, the student will explain the functions of reflex actions and instinctual behavior among living things.

4.5.5. Given the task, the student will contrast reflex actions, instinctual behavior, and learned behavior.

4.5.6. Given the task, the student will explain how the environment affects the development of learned behavior.

4.5.7. Given the task, the student will compare the learned behavior of man and other animals.

4.5.8. Given the task, the student will name and describe four reflex actions in man.

4.5.9. Given the task, the student will compare the physical adaptations of man and other living creatures.

4.5.10. Given the task, the student will contrast the adaptations of the three major races of man.

4.5.11. Given the task, the student will point to the location of Australia on a globe.

4.5.12. Given the task, the student will describe five major characteristics of Australia and its people.

TOPIC 6: MAN'S ROLE IN THE CHANGING ENVIRONMENT

4.6.1. Given the task, the student will describe the things that man can change.

4.6.2. Given the task, the student will describe the things that man cannot change.

4.6.3. Given the task, the student will distinguish between his inherited traits and learned behavior.

4.6.4. Given the task, the student will recite the Conservationist's Pledge.

4.6.5. Given the task, the student will name each of America's major natural resources.

4.6.6. Given the task, the student will explain why it is important to give special care to our natural resources.

4.6.7. Given the task, the student will define the term, conservationist.

4.6.8. Given the task, the student will describe the work done by conservationists.

4.6.9. Given the task, the student will point to the location of Japan on a globe.

4.6.10. Given the task, the student will describe five major characteristics of Japan and its people.

4.6.11. Given the task, the student will name five Americans who are agents of change with regard to handicapped people.

TOPIC 7: FOUNDERS OF A NEW NATION

4.7.1. Given the task, the student will tell Christopher Columbus' main contribution to the world.

4.7.2. Given the task, the student will tell the main contribution made by Captain John Smith.

4.7.3. Given the task, the student will tell the main contribution made by Miles Standish and the Pilgims.

4.7.4. Given the task, the student will name at least five major contributions made by Benjamin Franklin.

4.7.5. Given the task, the student will tell the major contribution made by Samuel Adams.

4.7.6. Given the task, the student will tell two major contributions made by George Washington.

4.7.7. Given the task, the student will tell the major contribution made by Alexander Hamilton.

4.7.8. Given the task, the student will tell three major contributions made by Thomas Jefferson.

4.7.9. Given the task, the student will tell the main contribution made by Daniel Boone.

4.7.10. Given the task, the student will tell the two major contributions made by Andrew Jackson.

4.7.11. Given the task, the student will describe the major contribution made by Lewis and Clark.

TOPIC 8: FAMOUS PEOPLE IN THE CIVIL WAR

4.8.1. Given the task, the student will describe the major contribution made by Abrham Lincoln.

4.8.2. Given the task, the student will describe the role of Robert E. Lee in the Civil War.

4.8.3. Given the task, the student will describe the roles of Clay, Webster, and Calhoun in the Civil War.

4.8.4. Given the task, the student will describe the role of Ulysses S. Grant in the Civil War.

4.8.5. Given the task, the student will describe the main contribution made by Clara Barton.

4.8.6. Given the task, the student will describe the role of Jefferson Davis in the Civil War.

TOPIC 9: INVENTORS WHO HELPED AMERICA

4.9.1. Given the task, the student will name at least four major contributions made by Thomas Edison.

4.9.2. Given the task, the student will tell the main contribution made by Alexander Graham Bell.

4.9.3. Given the task, the student will tell the main contribution made by Wilbur and Orville Wright.

4.9.4. Given the task, the student will tell the main contribution made by Henry Ford.

4.9.5. Given the task, the student will tell the main contribution made by Lee de Forest.

4.9.6. Given the task, the student will tell at least five main contributions made by George Washington Carver.

4.9.7. Given the task, the student will tell the major contribution made by Enrico Fermi.

TOPIC 10: AMERICANS AND WORLD LEADERSHIP

4.10.1. Given the task, the student will name at least two major contributions made by Theodore Roosevelt.

4.10.2. Given the task, the student will tell the major contribution made by Woodrow Wilson.

4.10.3. Given the task, the student will describe the role of Franklin D. Roosevelt in American history.

4.10.4. Given the task, the student will describe the role of Dwight D. Eisenhower in American history.

4.10.5. Given the task, the student will describe the role of John F. Kennedy in American history.

4.10.6. Given the task, the student will name the current President of the United States.

LEVEL 5

TOPIC 1: MAN, THE MASTER OF CHANGE

5.1.1. Given the task, the student will contrast the degree of change during the life of early man and the life of modern man.

5.1.2. Given the task, the student will name three major changes which occurred during the time of early man.

5.1.3. Given the task, the student will recognize that, although the environment works to change man, man also works to change the environment.

5.1.4. Given the task, the student will name the only constant in the evolution of living things.

5.1.5. Given the task, the student will define the scientific method.

5.1.6. Given the task, the student will describe the life of early man.

5.1.7. Given the task, the student will describe Darwin's conclusions regarding the origin of species.

5.1.8. Given the task, the student will describe how Darwin collected data to reach his conclusions.

5.1.9. Given the task, the student will describe what Darwin meant by "survival of the fittest."

5.1.10 Given the task, the student will define the term, selection.

5.1.11. Given the task, the student will define the term, adaptation.

5.1.12. Given the task, the student will name the ship used by Darwin to collect data to test his hypotheses.

5.1.13. Given the task, the student will describe the major contribution made by Mendel.

TOPIC 2: THE HUMAN REVOLUTION

5.2.1. Given the task, the student will describe several adaptations of early humanoids to their changing environments.

5.2.2. Given the task, the student will describe the role of inherited characteristics in the development of man.

5.2.3. Given the task, the student will define the term, division of labor.

5.2.4. Given the task, the student will describe how early hunting and gathering societies used a division of labor.

5.2.5. Given the task, the student will name four innate behaviors and four learned behaviors of hunting and food gathering societies.

5.2.6. Given the task, the student will describe how the Ice Age affected human development.

5.2.7. Given the task, the student will define the term, perception.

5.2.8. Given the task, the student will define the term, technology.

5.2.9. Given the task, the student will name five examples of technology during early man's evolution.

5.2.10. Given five examples of technology, the student will describe how each example gave man a practical advantage over previous groups.

5.2.11. Given the task, the student will define the term, capital.

5.2.12. Given the task, the student will give four examples of the capital of early man.

5.2.13. Given the task, the student will name several factors which influence the rate of change in a group's culture.

5.2.14. Given the task, the student will describe the attitudes of man during the Ice Age as expressed in his art and burial practices.

TOPIC 3: THE AGRICULTURAL REVOLUTION

5.3.1. Given the task, the student will point to each continent, ocean, and mountain range on a globe.

5.3.2. Given a map of the world, the student will point to the International Dateline and explain its significance.

5.3.3. Given the task, the student will name each season of the year and describe the climate of each season in the locale in which he resides.

5.3.4. Given the task, the student will define the term, agricultural revolution.

5.3.5. Given the task, the student will name six technological innovations which made the agricultural revolution possible.

5.3.6. Given the task, the student will name at least seven seeds that we eat.

5.3.7. Given the task, the student will name the oldest known agricultural village and give its age.

5.3.8. Given the task, the student will describe the adaptations made by the nomadic Lapps of Norway, Finland, Sweden, and Russia.

5.3.9. Given the task, the student will describe how early farms changed plants by careful selection.

5.3.10. Given the task, the student will infer how cereal growing changed patterns of human living.

5.3.11. Given the task, the student will name four factors that increased the spread of agriculture around the world.

TOPIC 4: COLONIES IN THE NEW LAND

5.4.1. Given the task, the student will name the first successful colony in the new world and give the date it was established.

5.4.2. Given the task, the student will name the company which was formed by merchants to establish colonies in the new world.

5.4.3. Given the task, the student will define the term, plantation.

5.4.4. Given the task, the student will tell why the early plantations were started along the James River.

5.4.5. Given the task, the student will name the first important money crop of the early plantations.

5.4.6. Given the task, the student will define the term, money crop.

5.4.7. Given the task, the student will tell when and why Negroes were brought to the new world as workers.

5.4.8. Given the task, the student will name three important events that occurred in Virginia in the year, 1619.

5.4.9. Given the task, the student will define the term, puritan.

5.4.10. Given the task, the student will describe the importance of the Mayflower Compact.

5.4.11. Given the task, the student will locate where the Pilgrims settled on a map of the new world.

5.4.12. Given the task, the student will tell one of the major reasons why the Pilgrims came to the new world.

5.4.13. Given the task, the student will name the original 13 colonies.

5.4.14. Given the task, the student will tell the names of the countries of origin of the immigrants who settled the 13 colonies.

5.4.15. Given the task, the student will tell how most children determined the kind of work they would learn to do.

5.4.16. Given the task, the student will write the approximate date at which the English controlled the East Coast of the new world.

TOPIC 5: BIRTH OF A NEW NATION

5.5.1. Given the task, the student will describe the major reasons why colonists became discontented with the rule of the English.

5.5.2. Given the task, the student will describe the events surrounding and including the Boston Tea Party.

5.5.3. Given the task, the student will describe the principal parties and events that occurred at Fort Ticonderoga.

5.5.4. Given the task, the student will name the individual chosen to train and lead the colonial army.

5.5.5. Given the task, the student will describe the major purpose of the rebellion from the viewpoint of the colonists.

5.5.6. Given the task, the student will name the famous document signed by the colonial leaders on July 4, 1776 and the name of the man most responsible for writing it.

5.5 7. Given the task, the student will describe the major contribution made by Thomas Paine.

5.5.8. Given the task, the student will write the name of the rebellion which led to American independence.

5.5.9. Given the task, the student will describe the role of each of the following people in the Revolutionary War: John Paul Jones, George Rogers Clark, Nathan Hale.

5.5.10. Given the task, the student will name the British General who surrendered to the Americans at Yorktown.

5.5.11. Given the task, the student will name the date that a peace treaty was signed between the colonists and the British to end the Revolutionary War.

5.5.12. Given the task, the student will name the four main boundaries of the United States immediately following the Revolutionary War.

5.5.13. Given the task, the student will name the individual who brought a written plan of government to the Constitutional Convention in Philadelphia.

5.5.14. Given the task, the student will name the individual most responsible for achieving cooperation among the various factions at the Constitutional Convention.

5.5.15. Given the task, the student will recite the "Bill of Rights."

5.5.16. Given the task, the student will name the two parts of the United States Congress.

5.5.17. Given the task, the student will name the individual who is commander of the armed forces in the United States.

5.5.18. Given the task, the student will name the three branches of government in the United States.

5.5.19. Given the task, the student will name the highest authority in the judiciary.

5.5.20. Given the task, the student will name the first four presidents of the United States.

5.5.21. Given the task, the student will name the first Secretary of the Treasury and the first cabinet member.

5.5.22. Given the task, the student will name the nations involved in the War of 1312.

5.5.23. Given the task, the student will name the president who was in office when the Louisiana Purchase was made.

5.5.24. Given the task, the student will name the individual who wrote the "Star Spangled Banner."

5.5.25. Given the task, the student will name the first state admitted to the union which was west of the Appalachian Mountains.

5.5.26. Given the task, the student will tell how the United States obtained Florida.

5.5.27. Given the task, the student will name the Indian girl who helped lead Lewis and Clark across the Rocky Mountains.

5.5.28. Given the task, the student will name the mountain named after Zebulon Pike, an explorer of the southern part of the Louisiana Purchase.

5.5.29. Given the task, the student will describe the significance of the battle cry, "Remember the Alamo!"

5.5.30. Given the task, the student will name three individuals who were killed by the Mexicans at the Alamo.

5.5.31. Given the task, the student will name the only state which was an independent nation before becoming a state.

5.5.32. Given the task, the student will tell how the United States obtained the area which now includes California.

TOPIC 6: NEW NATION TESTED

5.6.1. Given the task, the student will produce three reasons why settlers went to California.

5.6.2. Given the task, the student will tell how the United States obtained Oregon.

5.6.3. Given the task, the student will name the place and date that gold was discovered in California.

5.6.4. Given the task, the student will name the states which originally were part of the Oregon Territory.

5.6.5. Given the task, the student will discriminate the differences between the way of life in the North and the South before the Civil War.

5.6.6. Given the task, the student will tell the single most important reason the Civil War occurred.

5.6.7. Given the task, the student will describe the major outcome of the Missouri Compromise.

5.6.8. Given the task, the student will tell the year in which Abrham Lincoln became president.

5 6.9. Given the task, the student will name the eleven states which seceded from the union and name of the temporary country they formed .

5.6.10. Given the task, the student will name which side started the Civil War and the place at which it started.

5.6.11. Given the task, the student will name three Union and three confederate generals.

5.6.12. Given the task, the student will write the name of the document which legally freed the slaves and the name of the man who wrote it.

5.6.13. Given the task, the student will tell the year in which the Civil War ended.

5.6.14. Given the task, the student will tell how Lincoln died.

5.6.15. Given the task, the student will tell why, after the end of the Civil War, many men moved west to live.

5.6.16. Given the task, the student will tell how long Union soldiers stayed in the South after the Civil War.

5.6.17. Given the task, the student will describe the purpose of the "underground railroad."

TOPIC 7: A TIME FOR CHANGE

5.7.1. Given the task, the student will describe the importance of the four railroads which connected the east with the west in the United States by 1884.

5.7.2. Given the task, the student will tell why immigrants by the thousands came to America after the Civil War.

5.7.3. Given the task, the student will tell why it became possible for America to trade with other nations after the Civil War.

5.7.4. Given the task, the student will name six new possessions obtained by the United States following the Civil War and the Spanish American War.

5.7.5. Given the task, the student will tell when the United States completed the Panama Canal and why the Canal is strategically important.

5.7.6. Given the task, the student will tell the major importance of the Pan American Union of 1890.

5.7.7. Given the task, the student will write the year in which the United States entered the First World War and the side on which it fought.

5.7.8. Given the task, the student will name the main countries who fought with the Allies and the Axis powers.

5.7.9. Given the task, the student will name the general who commanded the troops in France in the First World War.

5.7.10. Given the task, the student will give the year during which World War I ended and the name of the treaty which officially ended the War.

5.7.11. Given the task, the student will describe the United States' role in World War I as the major factor which led to its recognition as a world power.

5.7.12. Given the task, the student will name several of the important changes in America that occurred during the 1920's.

5.7.13. Given the task, the student will describe the life style in America during the 1930's.

5.7.14. Given the task, the student will name the two sides that opposed each other during the Second World War.

5.7.15. Given the task, the student will name the individual countries who fought with the Allies and the Axis powers.

5.7.16. Given the task, the student will name the major event which ended the war with Japan during World War II.

5.7.17. Given the task, the student will name the year during which the United Nations was formed and its purpose.

5.7.18. Given the task, the student will tell why the United Nations sent troops into Korea in the 1950's.

5.7.19. Given the task, the student will name the two presidents who served during World War II.

5.7.20. Given the task, the student will name the last seven Presidents of the United States.

TOPIC 8: OUR COUNTRY TODAY

5.8.1. Given the task, the student will describe seven distinguishing features of the United States.

5.8.2. Given the task, the student will name the eight geographic regions of the United States.

5.8.3. Given the task, the student will write the distinctive features of each geographic region of the United States.

5.8.4. Given the task, the student will describe the development of communication systems in the United States.

5.8.5. Given the task, the student will name at least 10 inventions in the United States which greatly aided the development of the country.

5.8.6. Given the task, the student will tell how inventions helped the development of the United States.

TOPIC 9: URBAN REVOLUTION

5.9.1. Given the task, the student will name the area known as the "cradle of civilization."

5.9.2. Given the task, the student will tell why individuals live together and form communities.

5.9.3. Given the task, the student will define the term, gregarious.

5.9.4. Given the task, the student will describe why the formation of communities led to the establishment of political systems and government.

5.9.5. Given the task, the student will tell how technology has led to the division of labor (occupations) and social classes.

5.9.6. Given the task, the student will tell why technology tends to lead to increased urbanization.

5.9.7. Given the task, the student will tell why urban empires change very little once established.

TOPIC 10: INDUSTRIAL REVOLUTION

5.10.1. Given the task, the student will describe why the Roman Empire declined and city states emerged.

5.10.2. Given the task, the student will describe how the quality of life changes as a result of increased production, wealth, and trade.

5.10.3. Given the task, the student will name six major innovations which led to the Industrial Revolution.

5.10.4. Given the task, the student will name and describe five social problems created by rapid industrialization.

5.10.5. Given the task, the student will describe how social problems created by the industrial revolution have been solved.

5.10.6. Given the task, the student will contrast the lifestyles in industrialized nations and nonindustrialized nations. (use China, India, and South Africa as examples).

5.10.7. Given the task, the student will define the term, new imperialism.

5.10.8. Given the task, the student will describe five major problems faced by nonindustrialized nations.

LEVEL 6

TOPIC 1: TILLING THE SOIL

6.1.1. Given the task, the student will compare and contrast different environments in Europe.

6.1.2. Given the task, the student will explain how population affects the environment.

6.1.3. Given the task, the student will describe ways Europeans have changed their natural environment.

6.1.4. Given the task, the student will identify ways in which knowledge of farming spread through Europe.

6.1.5. Given the task, the student will explain how the spread of farming and the growth of population are related.

6.1.6. Given the task, the student will categorize the use of olive oil in the Mediterranean area.

6.1.7. Given the task, the student will describe the attitude of wealthy Romans toward poor Romans.

6.1.8. Given the task, the student will explain the manor system.

6.1.9. Given the task, the student will describe the relationship between lords and serfs.

6.1.10. Given the task, the student will describe the life and problems of peasants in the 12th and 13th centuries.

6.1.11. Given the task, the student will describe new farming techniques which came into practice in the Middle Ages.

6.1.12. Given the task, the student will identify the factors that led to the settlement of eastern Europe.

TOPIC 2: PATTERNS OF TRADE

6.2.1. Given the task, the student will classify the exports and imports of ancient Athens into categories of raw materials and finished products.

6.2.2. Given the task, the student will identify skills and crafts practiced by Athenian workers.

6.2.3. Given the task, the student will describe some of the luxuries available to Romans because of trade.

6.2.4. Given the task, the student will discuss the relationship between Roman seapower and Roman lifestyle.

6.2.5. Given the task, the student will explain how changing from raiding to trading helped or harmed Greece.

6.2.6. Given the task, the student will describe a medieval fair and its purposes.

6.2.7. Given the task, the student will tell what influence the Moslems had on European trade.

6.2.8. Given the task, the student will describe the Crusades.

6.[illegible].9. Given the task, the student will describe life in a typical medieval town.

6.2.10. Given the task, the student will define the purpose of the Hanseatic League.

6.2.11. Given the task, the student will describe the life of a medieval merchant.

TOPIC 3: SHAPING EUROPEAN SOCIETY

6.3.1. Given the task, the student will describe Solon's reforms of government.

6.3.2. Given the task, the student will describe the olympic games.

6.3.3. Given the task, the student will categorize several ideas as the thoughts of Socrates, Plato, or Aristotle.

6.3.4. Given the task, the student will describe the fall of the Greek city states.

6.3.5. Given the task, the student will identify ways in which the Romans improved the lands they conquered.

6.3.6. Given the task, the student will define the terms, patrician and plebian.

6.3.7. Given the task, the student will describe events which led to the death of Julius Caesar.

6.3.8. Given the task, the student will identify the causes for the fall of the Roman Empire.

6.3.9. Given the task, the student will define the term, feudalism.

6.3.10. Given the task, the student will describe the conflict between Roman rulers and early Christians.

6.3.11. Given the task, the student will describe the achievements of William, the Conqueror.

6.3.12. Given the task, the student will define the term, guild

6.3.13. Given the task, the student will describe the distinctive features of the Gothic cathedral.

6.3.14. Given the task, the student will compare and contrast Gothic, Greek, Roman, and modern architecture.

TOPIC 4: NEW TIMES AND NEW IDEAS

6.4.1. Given the task, the student will define the term, Renaissance.

6.4.2. Given the task, the student will describe the importance of Lorenzo De'Medici.

6.4.3. Given the task, the student will describe the achievements of Michaelangelo.

6.4.4. Given the task, the student will describe the homes of the wealthy during the Renaissance.

6.4.5. Given the task, the student will describe the conditions that led to the Reformation.

6.4.6. Given the task, the student will describe Martin Luther's views on the church.

6.4.7. Given the task, the student will describe the split between the Catholics and the Protestants and its effect on Europe.

6.4.8. Given the task, the student will describe the impact of the printing press on European life.

6.4.9. Given the task, the student will describe five important discoveries made during the scientific revolution.

6.4.10. Given the task, the student will describe the influence of Voltaire in Europe.

TOPIC 5: PEOPLE AND NATIONS

6.5.1. Given the task, the student will define the term, feudalism.

6.5.2. Given the task, the student will define the term, dynasty.

6.5.3. Given the task, the student will describe the Spanish Inquisition and the reasons why it occurred.

6.5.4. Given the task, the student will define the terms, sovereignty and absolution.

6.5.5. Given the task, the student will describe the main events during King Henry XIV's reign.

6.5.6. Given the task, the student will describe the importance of the Magna Carta, the Petition of Rights, and the Bill of Rights.

6.5.7. Given the task, the student will describe the conditions of the poor in Europe in the 17th century.

6.5.8. Given the task, the student will describe the events of the French Revolution.

6.5.9. Given the task, the student will compare and contrast conservatives, liberals, and radicals in their differing views toward change.

6.5.10. Given the task, the student will describe the events which led to the unification of Germany.

TOPIC 6: WORKERS AND MONEY

6.6.1. Given the task, the student will define the term, capitalism.

6.6.2. Given the task, the student will describe how new world discoveries promoted European capitalism.

6.6.3. Given the task, the student will describe the influence of the Industrial Revolution on children.

6.6.4. Given the task, the student will describe some of the reforms which were outgrowths of the problems caused by he Industrial Revolution and the names of the reformers associated with them.

6.6.5. Given the task, the student will describe the values promoted by Karl Marx.

6.6.6. Given the task, the student will evaluate contributions made by Europeans and problems they created for colonial nations.

6.6.7. Given the task, the student will identify the causes of colonial rebellion against European imperialism.

TOPIC 7: TWENTIETH CENTURY CONFLICT

6.7.1. Given the task, the student will discuss the short and long term causes of World War I.

6.7.2. Given the task, the student will describe the terms of peace drawn up by the leaders of the United States, Britain, France, and Italy following World War I.

6.7.3. Given the task, the student will define the term, totalitarianism.

6.7.4. Given the task, the student will describe the philosophy of Stalin.

6.7.5. Given the task, the student will compare and contrast fascism, communism, nazism, and absolutism.

6.7.6. Given the task, the student will identify the conditions which led people to give up their individual rights to dictators.

6.7.7. Given the task, the student will describe the philosophy of Adolf Hitler.

6.7.8. Given the task, the student will describe what life was like in concentration camps in Germany during World War II.

6.7.9. Given the task, the student will name the leaders of each major country involved in World War II.

6.7.10. Given the task, the student will describe the Marshall Plan.

6.7.11. Given the task, the student will describe the objectives of the Common Market.

6.7.12. Given the task, the student will describe what is meant by the "Cold War."

6.7.13. Given the task, the student will describe some of the major obstacles to unity in Europe.

6.7.14. Given the task, the student will describe how the economy has changed in Europe in modern times.

6.7.15. Given the task, the student will describe the objectives of NATO and tell what the letters mean.

LEVEL 7

TOPIC 1: FOREFATHERS AND FOUNDERS

7.1.1. Given the task, the student will name the main groups who became the early settlers in America.

7.1.2. Given the task, the student will tell the chief motives for colonizing in America.

7.1.3. Given the task, the student will tell the names of the two main kinds of English colonials.

7.1.4. Given the task,the student will describe the reasons why slavery became prevalent in the colonies.

7.1.5. Given the task, the student will define the term, indentured servant.

7.1.6. Given the task, the student will describe the importance of Jean de Crevecoeur.

7.1.7. Given the task, the student will describe the major provisions of the Articles of Confederation.

7.1.8. Given the task, the student will describe the major weaknesses of the Articles of Conferation.

7.1.9. Given the task, the student will name the two major political parties in the United States and what is meant by the term, political party.

7.1.10. Given the task, the student will tell how political parties originated in the United States.

7.1.11. Given the task, the student will define the term, caucus system.

7.1.12. Given the task, the student will describe the criteria for registering to vote in America.

7.1.13. Given the task, the student will define the term, inauguration.

7.1.14. Given the task, the student will define the term, election.

7.1.15. Given the task, the student will describe the function of nominating conventions.

7.1.16. Given the task, the student will describe three political party campaign tactics.

7.1.17. Given the task, the student will describe the role of third parties in the United States.

7.1.18. Given the task, the student will describe the importance of John D. Rockefeller and the Standard Oil Company in American history.

7.1.19. Given the task, the student will describe the role of Andrew Carnegie in American history.

TOPIC 2: THE REFORM MOVEMENT

7.2.1. Given the task, the student will describe the events which led to the origin of labor unions in America.

7.2.2. Given the task, the student will describe the events which led farmers to organize in America.

7.2.3. Given the task, the student will describe what is meant by the term, the "Progressive Era."

7.2.4. Given the task, the student will describe what is meant by the term, consumer advocacy.

7.2.5. Given the task, the student will describe the progress made in women's rights in the 20th century.

7.2.6. Given the task, the student will describe the purpose and function of social security in America.

7.2.7. Given the task, the student will describe the purpose and function of the Juvenile Court System in the United States.

TOPIC 3: AMERICA AS A WORLD POWER

7.3.1. Given the task, the student will name the major event which helped the United States most to become recognized as a world power.

7.3.2. Given the task, the student will describe the United States' role as a moral leader in the world.

7.3.3. Given the task, the student will give evidence of the United States' belief in noninvolvement in world conflicts.

7.3.4. Given the task, the student will describe the United States' role in the formation of the League of Nations and the United Nations as evidence of its interest in world peace.

7.3.5. Given the task, the student will describe the United States' role in World War II as evidence of its peace-making function in the world.

TOPIC 4: RACE, POVERTY, AND YOUTH

7.4.1. Given the task, the student will describe the American racial dilemma: prejudice.

7.4.2. Given the task, the student will describe some of the successes in the black rights movement in America.

7.4.3. Given the task, the student will describe how schools have been desegregated in America.

7.4.4. Given the task, the student will describe the drive for voter registration.

7.4.5. Given the task, the student will describe the events which have led to urban riots in America.

7.4.6. Given the task, the student will describe the contributions of Martin Luther King, Jr. to help the black population.

7.4.7. Given the task, the student will describe how blacks have avoided violence and used legal action and education to achieve their rights.

7.4.8. Given the task, the student will define the term, ghetto.

7.4.9. Given the task, the student will describe how poverty affects the life styles of all people in America.

7.4.10. Given the task, the student will describe the problems of migrant workers in America.

7.4.11. Given the task, the student will describe the problems of the elderly in America.

7.4.12. Given the task, the student will describe the problems of the American Indian.

7.4.13. Given the task, the student will describe the problems of youth in America.

7.4.14. Given the task, the student will describe the problems of veterans in America.

7.4.15. Given the task, the student will describe the problems of drug addiction in America.

7.4.16. Given the task, the student will compare and contrast the attitudes of adults and youth in America regarding its problems.

TOPIC 5: GEORGIA HISTORY

7.5.1. Given the task, the student will name the counties in the state of Georgia.

7.5.2. Given the task, the student will name the branches of government in Georgia and describe the function of each.

7.5.3. Given the task, the student will name the capitol of Georgia.

7.5.4. Given the task, the student will name some of the famous people in the history of Georgia and describe the contribution of each.

7.5.5. Given the task, the student will name the chief products of Georgia, including its main imports and exports.

7.5.6. Given the task, the student will name the Georgia symbols.

7.5.7. Given the task, the student will describe the chief groups of people and places in Georgia.

7.5.8. Given the task, the student will name the largest institutions of higher education in Georgia.

Footnote: Teacher discretion is to be used in determining the number of items and the percentage of accuracy to be achieved. Also, the teacher will specify the type of response, whether oral or written.